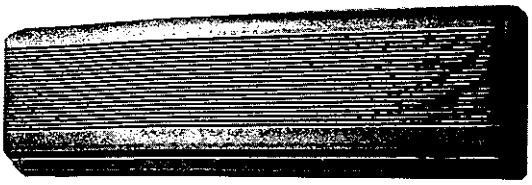
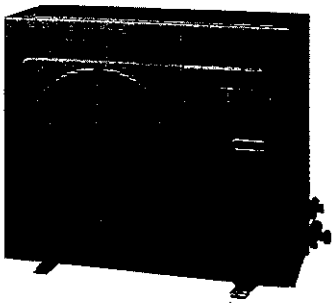
ORDER NO. RAC9402008C2

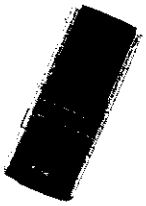
Service Manual

Room Air Conditioners

CS-1873KE/CU-1873KE
CS-2473KE/CU-2473KE







MAICO/MACC
RETURNABLE
OSS SECTION

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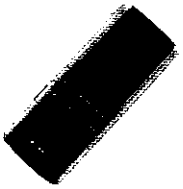
Panasonic

Functions

Remote-control transmitter



Remote Controller

Operation START/STOP

△◎❄◊

Operation Mode Selection

△ Automatic Operation Mode
❄ Cooling Operation Mode
◊ Soft Dry Operation Mode
◎ Heating Operation Mode

Indoor Fan Speed Selection

High Speed
Medium Speed
Low Speed
Automatic Fan Speed

Room Temperature Setting/Time Setting

- Temperature Setting (16°C to 30°C).
- (higher), (standard), (lower) ...Automatic Operation.
- Time Setting (24-hours).

.....up to 12
.....up to 1

☆ **Sleep Mode Auto-Control**

- Starts/stops when the button is pressed.

Timer Operation Selection

- 24-hour, OFF/ON Dual/Real Timer Setting.

SET /C **Timer Operation Set/Cancel**

- Set/Cancel the selected Timer Operation.

Airflow Direction Control

- Airflow Direction Manual Control.
- Automatic Airflow Direction Control.

Indoor unit

Power Switch OFF/ON

Room Temperature Control

- Maintains the room temperature in accordance with the Setting Temp.

Time Delay Safety Control

- Restarting is inhibited for approx. 3 minutes.

Circuit Protection Control

- 60-seconds forced operation of the compressor.

Indoor Fan Speed Control

- High, Med, Low and Auto Fan Speed.

Operation Indication Lamps (LED)

(Red)..... Lights up in operation
Blinks in automatic operation mode judging
(Orange)..... Lights up in timer setting
☆ (Orange)..... Lights up in sleep mode operation

Soft Dry Operation Mode

- Intermittent Operation with Super Low Fan speed.

Automatic Operation Determination (for 20 sec.)

- Selects cooling, dry or heating by the indoor intake sensor.

Above 23°C..... Operates at Cooling Mode
20°C to 23°C..... Operates at Soft Dry Mode
Below 20°C..... Operates at Heating Mode

Note: Once the Operation Mode is determined, it will not change until you select the Operation Mode again.

Functions

Hot-start Control (Heating)

- The indoor fan stops until the Evaporator piping temperature will be reached.

Automatic Restarting Control

- 7-minutes automatic restarting at Cooling, Soft Dry operation.

Sleep Mode Auto Control

The Fan is switched to Super Low fan speed and the unit will be stopped after 8-hours (Cooling & Soft Dry Mode) or 5-hours (Heating Mode).

- The setting temperature will be raised by 0.5°C at the starting and by 0.5°C one hour later (Soft Dry or Cooling operation).
- The setting temperature will be dropped by 2°C at the starting and by 3°C one hour later (Heating operation).

Anti-freezing Control for the Evaporator (Cooling or Soft Dry)

- Compressor will be stopped when the Evaporator's piping temperautre is lower than 2°C and continue for 4 minutes.
- Restarting at 10°C or higher (Time Delay Safety Control has a priority).

Airflow Direction Control

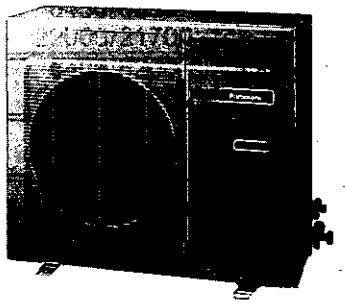
Automatic Airflow Direction Control
〈Cooling or Soft Dry〉
- The louver automatically swings up and down within a range between horizontal and 30° downward.

〈Heating〉
- The louver is set at 57° downward or horizontal position during operation.

Airflow Direction Manual Control
〈Cooling or Soft Dry〉
- The louver can be set within a range between horizontal and 30° downward.

〈Heating〉
- The louver can be set within a range between horizontal and 62° downward.

Outdoor unit



4-Way valve Control (Heating)

- When the unit is switched to "OFF" during Heating Operation, 4-way valve stays at Heating Position for 5 minutes.

Overload Protector

- Inner-protector (Fan Motor, Comp.)

60 sec. Forced Operation Control

- Once the compressor is activated, it does not stop for 60 secs.
- Stops immediately with remote controller stop.

Deice (Defrost) Control (Heating)

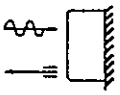
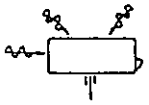
- Deicing starts when the outdoor piping temperature is below −2°C continued for 50 seconds.
- During deicing operation, both indoor and outdoor Fans stop.
- Deicing stops when the outdoor piping temperature reaches 12°C or after 12 minutes, of deicing operation.

Outdoor Fan Operation Control

〈Cooling or Soft Dry〉
Hi-speed..... more than 31°C of ambient temperature.
Lo-speed..... less than 29°C of ambient temperature.
〈Heating〉
Lo-speed..... more than 15.5°C of ambient temperature.
Hi-speed..... less than 13.5°C of ambient temperature.

- For Over-heating Protection, the Fan is switched ON or OFF depending on the piping temperature and the ambient temp.

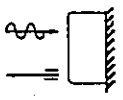
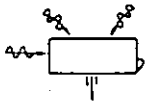
Product Specifications

			Unit	CS-1873KE	CU-1873KE
Cooling Capacity			W B.t.u./h	5200/5150 17700/17600	
Heating Capacity			W B.t.u./h	5500/5350 18800/18200	
Moisture Removal			l/h Pint/h	2.9 6.1	
Power Source			Phase V Cycle	Single 240/220 50	
Airflow Method			OUTLET INTAKE	SIDE VIEW 	TOP VIEW 
Air Circulation			m^3/min. ft^3/min.	14.0 490	
Noise Level	Cooling			Hi; 44, Lo; 39/38	Hi; 56/53
	Heating			Hi; 43, Lo; 39	Hi; 57/55
Electrical Data	Input		W	Cooling; 2190/2080	Heating; 2080/1940
	Running Current		A	Cooling; 10.7/10.3	Heating; 10.6/9.6
	C.O.P.		W/W	Cooling; 2.4/2.5	Heating; 2.6/2.8
	Starting Current		A	52	
Piping Connection Port (Flare piping)			inch	L; Half Union 1/4″	L; 3-way valve 1/4″
			inch	G; Half Union 1/2″	G; 3-way valve 1/2″
Pipe Size (Flare piping)			inch	G (gas side); 1/2″	G (gas side); 1/2″
			inch	L (liquid side); 1/4″	L (liquid side); 1/4″
Drain hose	Inner dia.		mm	16.0	
	Length		mm	750	
Power cord	Length		m	2.2	
	Number of core-wire			3 core-wire/2.0mm²	
Dimensions		Height	inch (mm)	12-13/32″ (315)	26-31/32″ (685)
		Width	inch (mm)	40-3/16″ (1020)	31-1/2″ (800)
		Depth	inch (mm)	7-3/32″ (180)	11-13/16″ (300)
Net Weight			lb (Kg)	26 (12)	135 (61)
Compressor		Type			Rotary (1 cylinder) rolling piston type
	Motor	Type			Induction (2-pole)
		Rated Output	W		1700
Air Circulation		Type		Cross-flow Fan	Propeller Fan
	Motor	Type		Transistor (4-pole)	Induction (4-pole)
		Input	W	—	High; 137/121, Low; 72/62
		Rated Output	W	20	65
Heat Exchanger			Rows/Stage	Plate fin configuration, forced draft 2/12, 19 FPI	2/26, 14 FPI
Refrigerant Control Device				—	Capillary Tube
Refrigeration Oil			(c.c.)		SUNISO 4GDID or ATMOS M60 (700)
Refrigerant (R-22)			g (oz)		1,640 (57.9)
Thermostat				Electronic Control	
Protection Device					Inner & Overload Protectors
Timer				24-hour, OFF/ON Dual/Rear Timer	
Air Filter				P.P. Honeycomb	

Parts Provided				
	1	Installation plate	6	Vinyl tape
	2	Remote control	7	Screw for Installation plate (4pcs)
	3	Battery (2pcs)	8	Screw for Holder-R. control (2pcs)
	4	Insulation material (indoor)	9	Air Purifying Filter (2pcs)
	5	Holder for Remote control		

• Specifications are subject to change without notice for further improvement.

Product Specifications

			Unit	CS-2473KE	CU-2473KE
Cooling Capacity			W B.t.u./h	6450/6350 22000/21700	
Heating Capacity			W B.t.u./h	6400/6200 21800/21100	
Moisture Removal			l/h Pint/h	3.8 8.0	
Power Source			Phase V Cycle	Single 240/220 50	
Airflow Method			OUTLET INTAKE	SIDE VIEW 	TOP VIEW 
Air Circulation			m^3/min. ft^3/min.	15.0 530	
Noise Level	Cooling			Hi; 48, Lo; 42	Hi; 61/59
	Heating			Hi; 47, Lo; 41	Hi; 62/60
Electrical Data	Input		W	Cooling; 2890/2750	Heating; 2640/2450
	Running Current		A	Cooling; 13.6/13.3	Heating; 13.1/12.0
	C.O.P.		W/W	Cooling; 2.2/2.3	Heating; 2.4/2.5
	Starting Current		A	59	
Piping Connection Port (Flare piping)			inch	L; Half Union 1/4″	L; 3-way valve 1/4″
			inch	G; Half Union 5/8″	G; 3-way valve 5/8″
Pipe Size (Flare piping)			inch	G (gas side); 5/8″	G (gas side); 5/8″
			inch	L (liquid side); 1/4″	L (liquid side); 1/4″
Drain hose	Inner dia.		mm	16.0	
	Length		mm	750	
Power cord	Length		m	2.2	
	Number of core-wire			3 core-wire/3.5mm²	
Dimensions		Height	inch (mm)	12-13/32″ (315)	26-31/32″ (685)
		Width	inch (mm)	40-3/16″ (1020)	31-1/2″ (800)
		Depth	inch (mm)	7-3/32″ (180)	11-13/16″ (300)
Net Weight			lb (Kg)	26 (12)	137 (62)
Compressor		Type			Rotary (1 cylinder) rolling piston type
	Motor	Type			Induction (2-pole)
		Rated Output	W		2,200
Air Circulation		Type		Cross-flow Fan	Propeller Fan
	Motor	Type		Transistor (4-pole)	Induction (4-pole)
		Input	W	—	High; 186/167, Low; 90/77
		Rated Output	W	40	100
Heat Exchanger			Rows/Stage	Plate fin configuration, forced draft 2/12, 19 FPI	2/26, 16 FPI
Refrigerant Control Device				—	Capillary Tube
Refrigeration Oil			(c.c.)		SUNISO 4GDID or ATMOS M60 (1,130)
Refrigerant (R-22)			g (oz)		1,720 (60.7)
Thermostat				Electronic Control	
Protection Device					Inner & Overload Protectors
Timer				24-hour, OFF/ON Dual/Rear Timer	
Air Filter				P.P. Honeycomb	

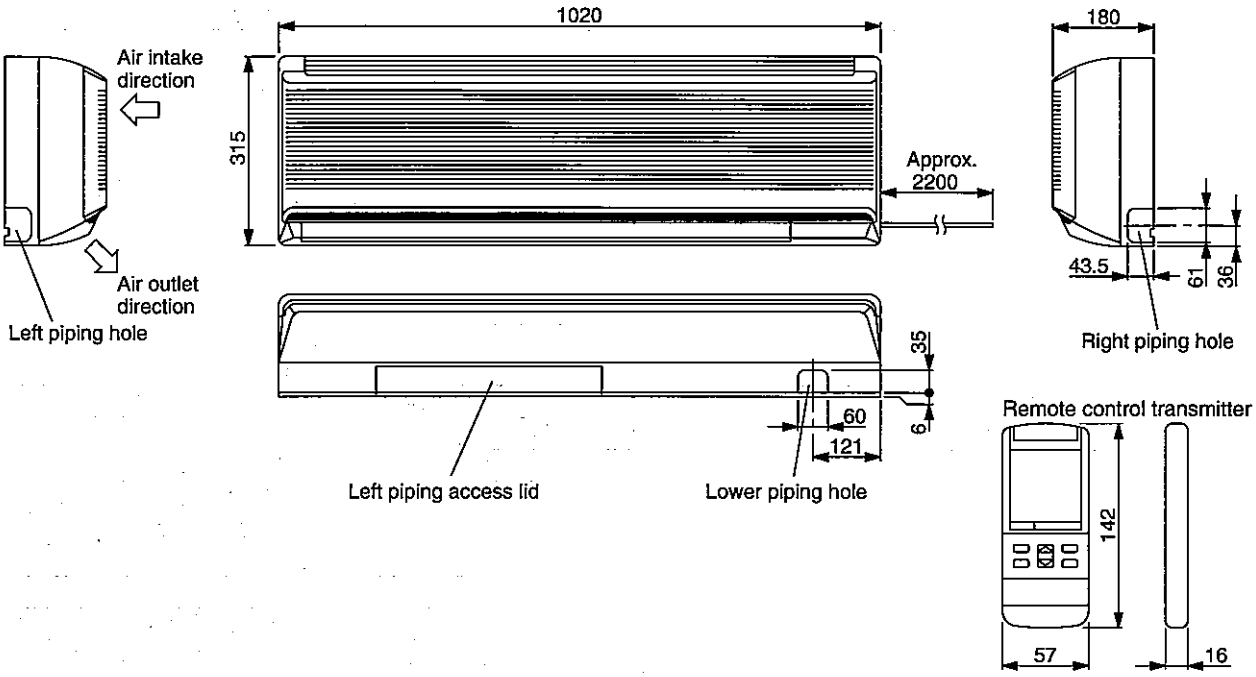
Parts Provided				
	1	Installation plate	6	Vinyl tape
	2	Remote control	7	Screw for Installation plate (4pcs)
	3	Battery (2pcs)	8	Screw for Holder-R. control (2pcs)
	4	Insulation material (indoor)	9	Air Purifying Filter (2pcs)
	5	Holder for Remote control		

• Specifications are subject to change without notice for further improvement.

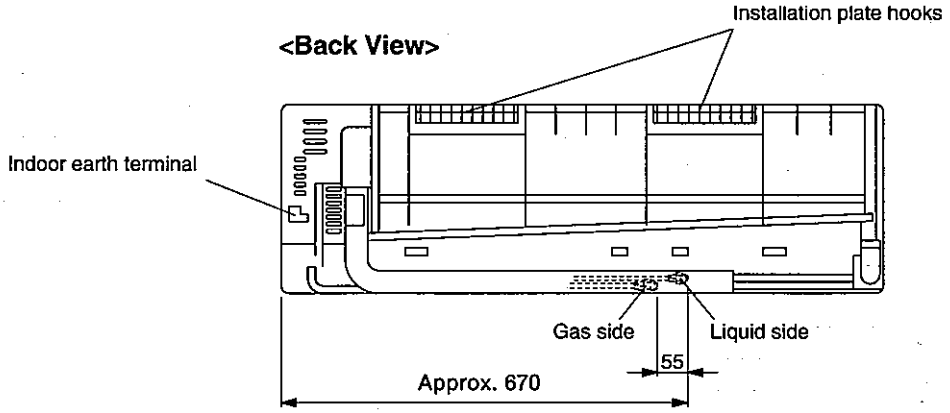
Dimensions

- **CS-1873K/CS-2473K**

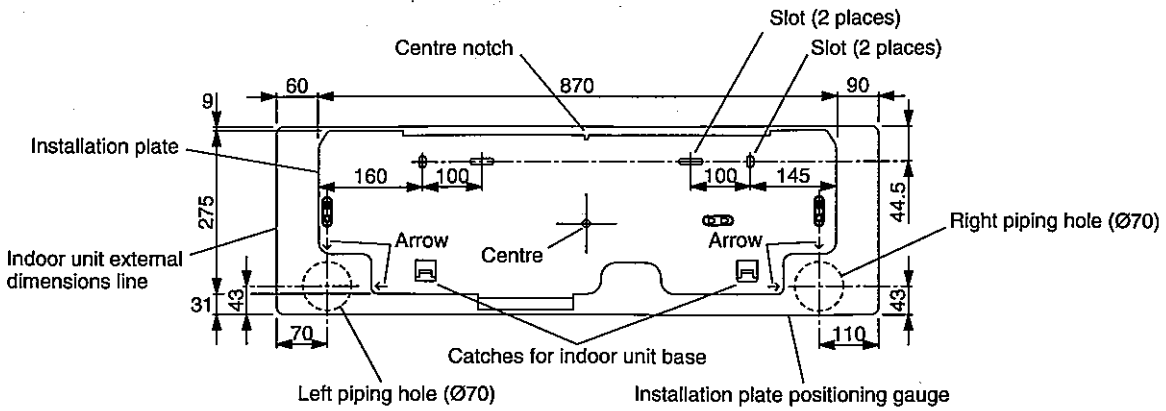
<Front View>



<Back View>

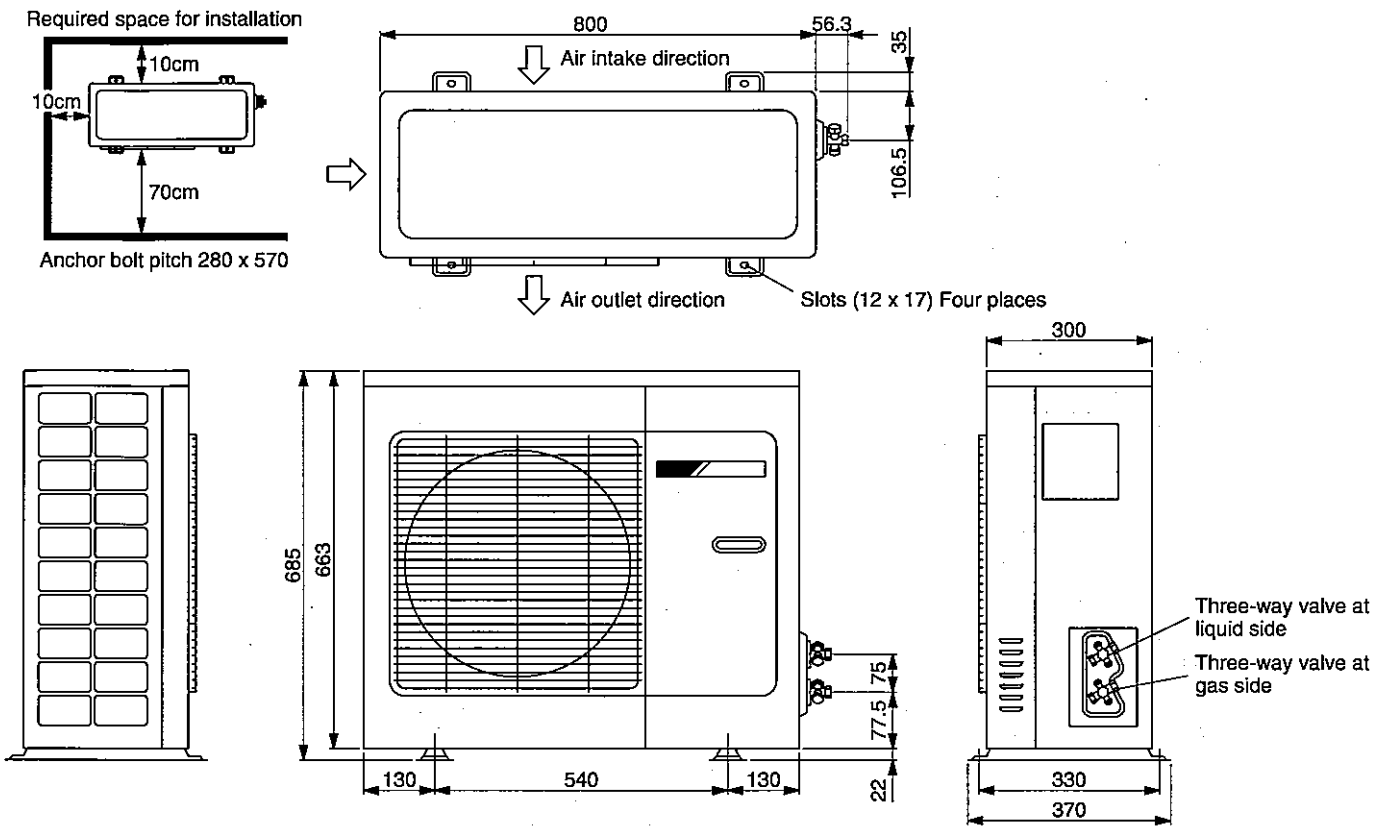


Relative position between the indoor unit and the installation plate <Front View>



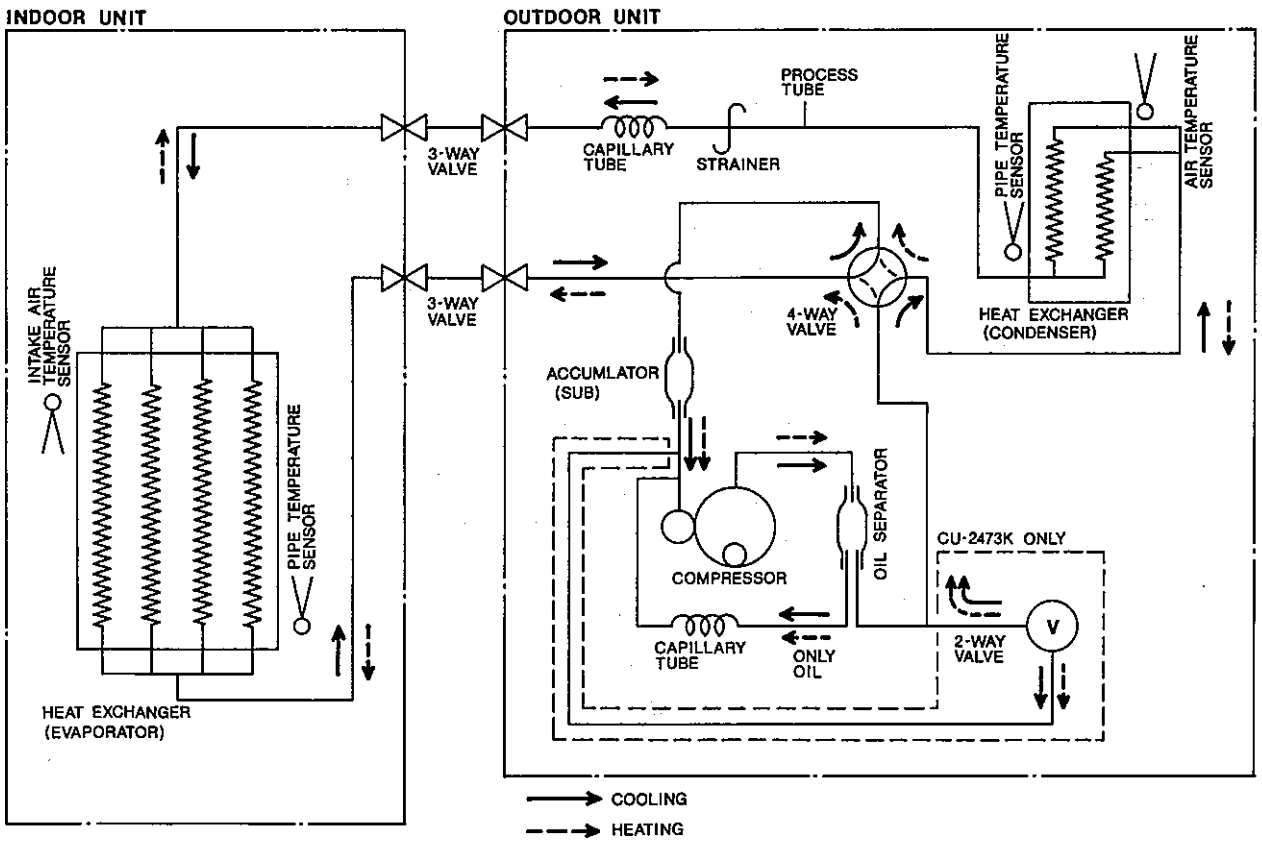
Dimensions

• CU-1873K/CU-2473K



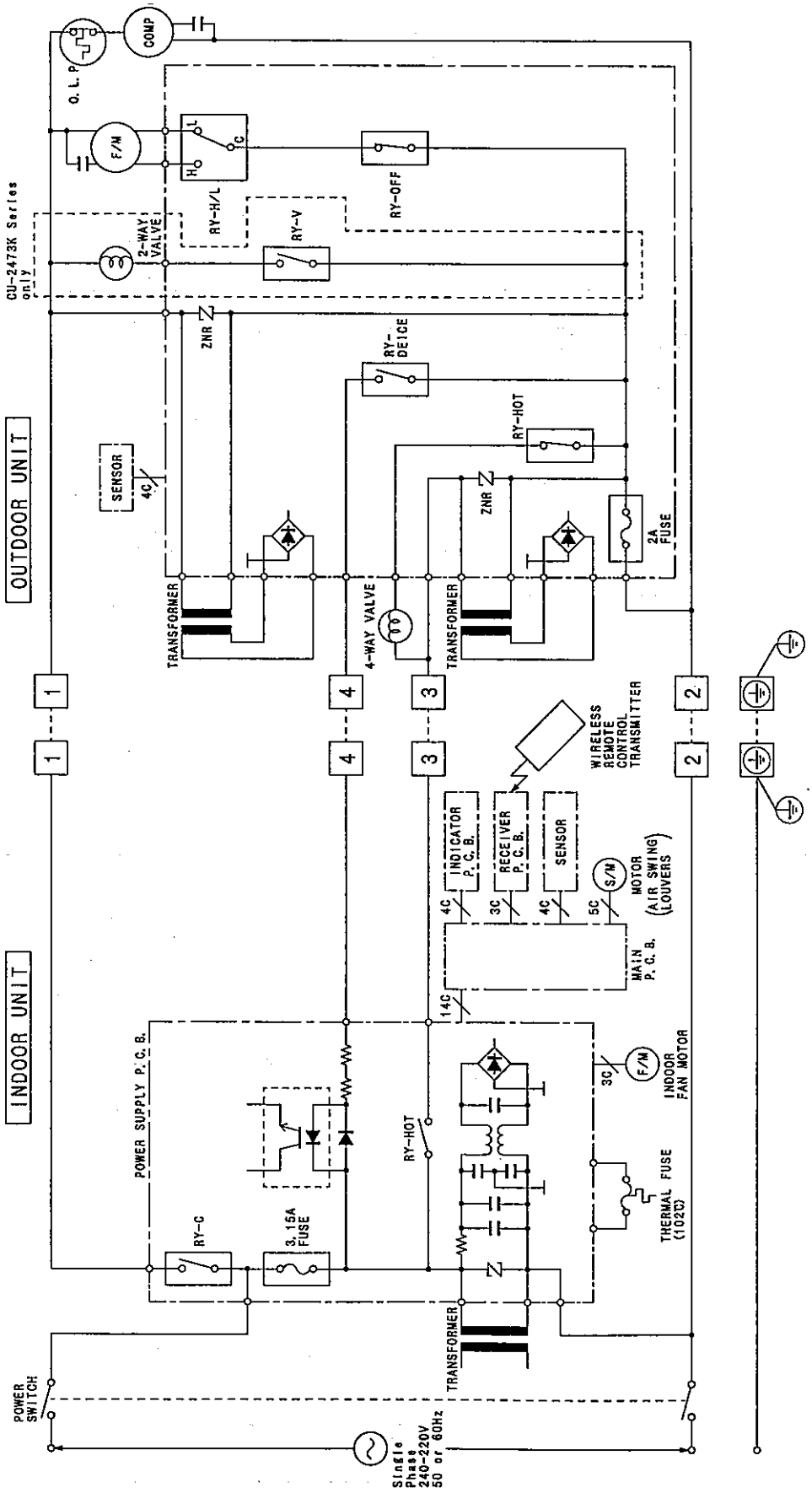
Refrigeration Cycle Diagram

CS-1873K/CU-1873K
CS-2473K/CU-2473K



Block Diagram

- **CS-1873K/CU-1873K•CS-2473K/CU-2473K Series**

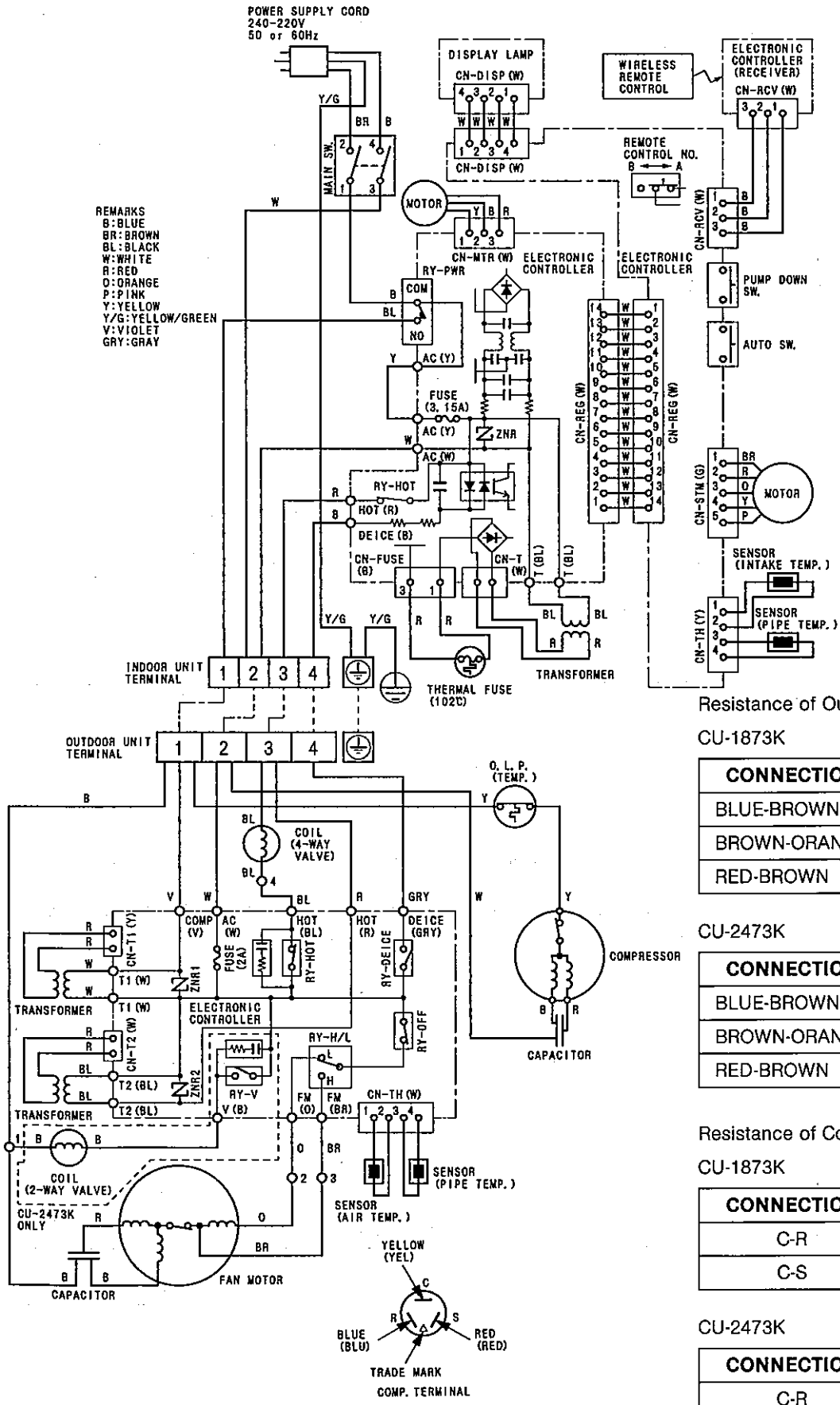


※ ☐ indicates the electronic control unit.

※ "C" indicates the number of core wires. (Example: 7C=7 core wires)

Wiring Diagram

• CS-1873K/CU-1873K•CS-2473K/CU-2473K Series



REMARKS

B	: BLUE
BR	: BROWN
BL	: BLACK
W	: WHITE
R	: RED
Y	: YELLOW
O	: ORANGE
P	: PINK
Y/G	: YELLOW/GREEN
V	: VIOLET
GRY	: GRAY

Resistance of Outdoor Fan Motor Windings

CU-1873K

CONNECTION	CWA92176 (Ω)
BLUE-BROWN	83.4
BROWN-ORANGE	67.3
RED-BROWN	66.5

CU-2473K

CONNECTION	CWA92183 (Ω)
BLUE-BROWN	57.9
BROWN-ORANGE	70.6
RED-BROWN	74.9

Resistance of Comp. Windings

CU-1873K

CONNECTION	2JS356D3BA01 (Ω)
C-R	0.97
C-S	3.92

CU-2473K

CONNECTION	2JS442D3BB01 (Ω)
C-R	0.95
C-S	4.39

★Resistance at 20°C of Ambient temp.

Operation Details

1) Cooling Mode Operation

When selecting the Cooling (❄) Mode Operation, the unit will operate according to the setting by the Remot Controller and the operation is as the following.

Time Delay Safety Control

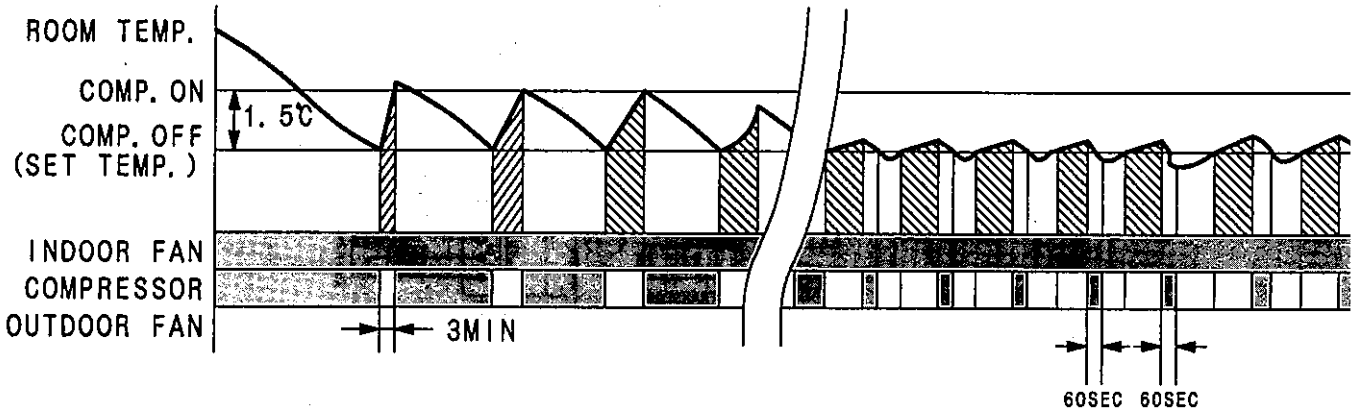
3 min. ..... The Compressor is ceased for 3 minutes to balance the pressure in the refrigeration cycle. (Protection of compressor)

Automatic Restarting Control

7 min. ..... The unit will automatically operate in 7 minutes even if the room temperature is not reached (Prevention of raising the humidity)

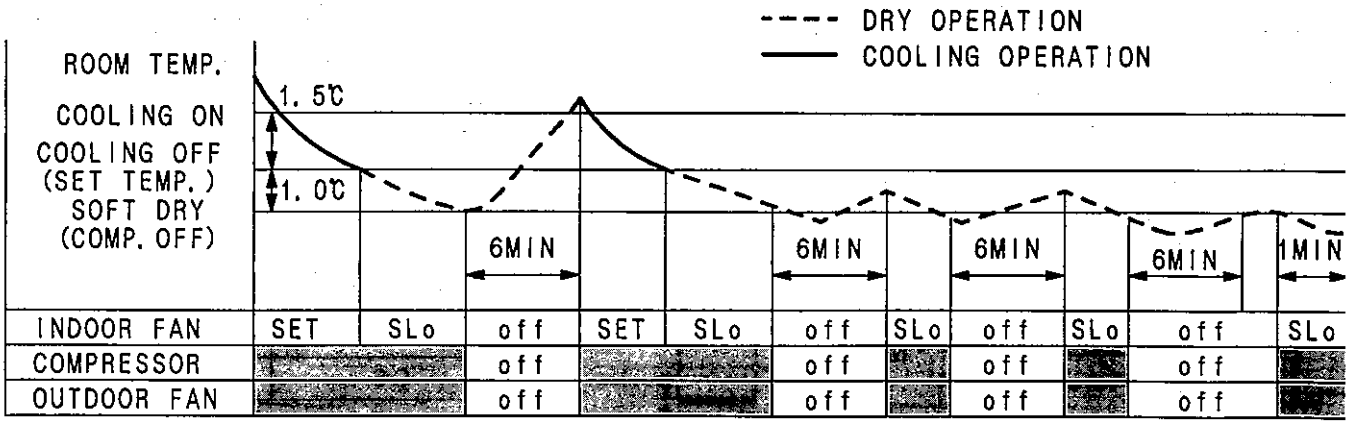
Compressor Forced Operation Control

60 sec. ..... The Compressor is switched ON at once, it is to be operated for 60 seconds. (Protection of compressor)



2) Soft Dry Mode Operation

When selecting the Soft Dry (◇) Mode Operation, the operation will be cooling until the Room Temperatur reaches the Set Temp. on the remote control, and then Soft Dry will activate.
(During Soft Dry operation, the fan of the indoor unit will operate at supper low fan speed, and the operation wi be switched on and off. Once Soft Dry operation is turned off, it stops for 6 minutes.)



SET:SETTING AIR VOLUME ▒ OPERATION □ STOP

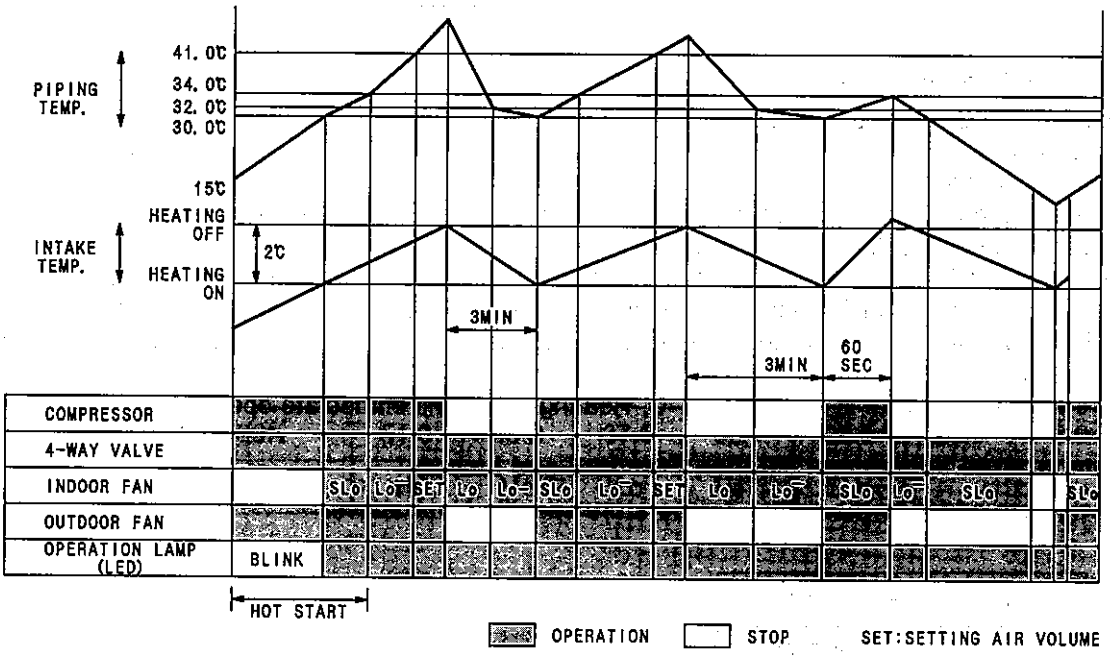
(Recommended Condition: Set Fan Speed ⟶ Hi
Set Temp. ⟶ 24°C)

3) Heating Mode Operation

When selecting the Heating (◎) Mode Operation, the unit will operate according to the setting by the Remote Controller and the operation is as well as the following.

1. Room temperature can be set in 1°C steps in the range of 16 to 30°C. Relationship between the remote controller temperature adjustment knob and operation is shown in the diagram below.
2. Taking the difference between the room temperature distribution and intake air temperature, heating ON temperature is set 0.5°C higher than the remote controller setting.

〈Normal operation example〉

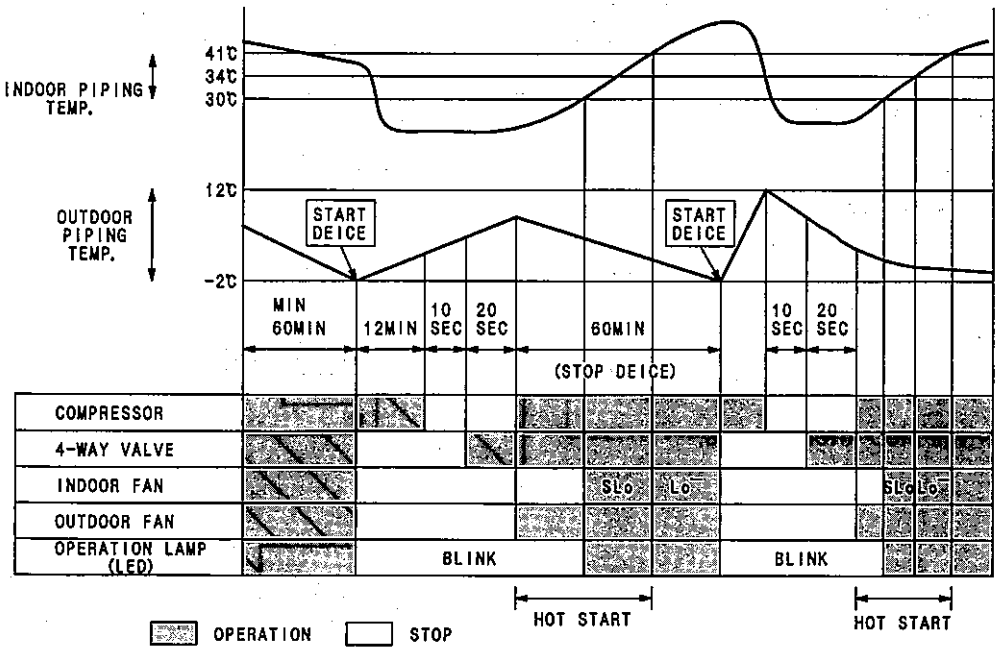


4) Deice Control

• Deicing operation is controlled by sensing the indoor piping temperature and timer.

(1) Model

- Deicing starts after 60 minutes of heating operation (from previous deicing operation ends) and the outdoor piping temperature is lower than −2°C.
- Deicing ends by function of the after 12 minutes of operation or outdoor piping temperature reaches 12°C.



5) Automatic Mode Operation 〈Basic Operation Mode〉

A. Standard for determining operation mode

Intake air temperature		
↑	23°C	Cooling Mode
		Soft Dry Mode
	20°C	Heating Mode

	Setting Temperature (Standard)
Cooling Mode	25°C
Soft Dry Mode	22°C
Heating Mode	21°C

B. Method for determining operation mode

(a) Indoor fan operates at supper low fan speed for 20 seconds.
(b) After judging indoor air temperature, the operation mode is determined and operation continued at th mode determined.
(c) After the operation mode has been determined, the mode does not change. However, Soft Dry mod operation includes cooling mode operation.
(d) If Automatic Mode operation is started while the air conditioner is operating, operation will continue. If current operation is in Cooling mode (including the operation which is a part of Soft Dry mode opera tion), it will be maintained, for 20 seconds at SLo (Super Low fan speed). Then, the selected operatio mode will continues.
(e) If the indoor air terminal is less than 16°C, Heating mode will immediate operate.

C. Room temperature adjustment (Higher, Standard and Lower)

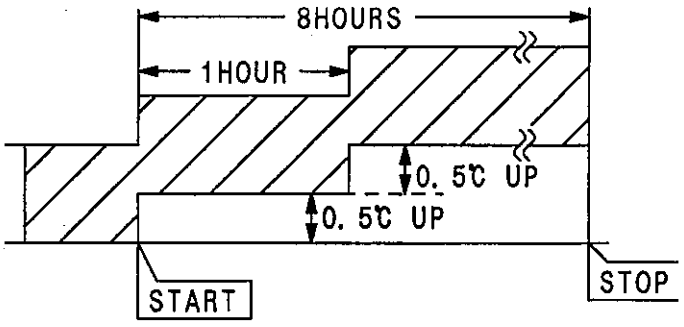
The following are added to the setting temperature specified in A above.

Higher	→	+2°C
Standard	→	±0°C
Lower	→	−2°C

6) Sleep Mode Auto Operation

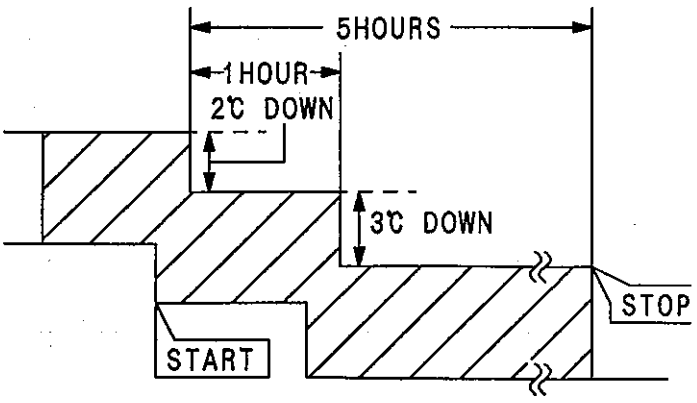
① Cooling or Soft Dry operation

When you press the SLEEP Mode, the following movement will start to avoid overcooling.
- The fan speed is automatically set to Low.
- The setting temperature will be risen by **0.5**°C at the start of operation and by **0.5**°C one hour later.
- The operation will stop after **8** hours.



② Heating operation

When you press the SLEEP Mode, the following movement will start to avoid overheating.
- The fan speed is automatically set to Low or Super Low.
- The setting temperature will be dropped by **2**°C at the start of operation and by **3**°C one hour later.
- The operation will stop after **5** hours.



7) Indoor Fan Speed Control

(1) Auto Fan Speed Control
When set to Auto Fan Speed, the fan speed is adjust between maximum and minimum setting as shown below.
(2) Manual Fan Speed Control
Basic fan speed adjustment (3 settings, from Lo to Hi) can be carried out by using the Fan Speed Selection button, as shown below.
When in Soft Dry mode, the fan speed is set to SLo.

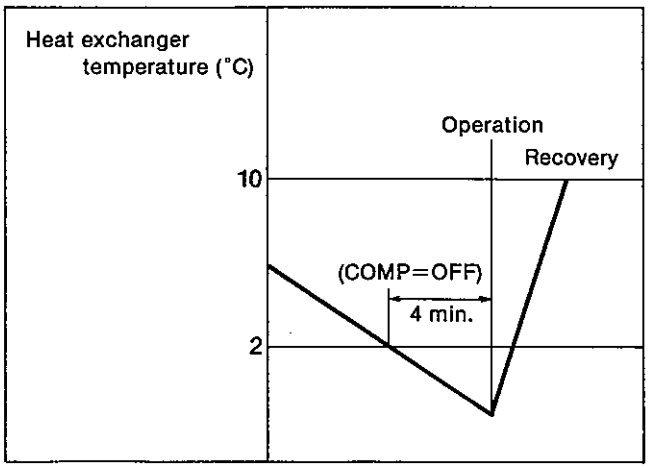
Fan Speed		High Speed ⟷ Low Speed							
No.		7	6	5	4	3	2	1	STOP
Cooling	Manual	○	○	○					
	Auto	○	○						
Soft Dry						○			
Heating	Manual	○	○	○	○	○			
	Auto		○	○	○	○			
CN-MTR ③ PIN VOLTAGE (V)	CS-1873K	33.0	30.0	26.0	23.5	19.5	15.0	8.0	0
	CS-2473K	51.0	45.0	37.5	32.0	28.5	20.0	8.0	0
		Hi	Me	Lo	Lo⁻	SLo			

8) Delayed ON Timer Control

When the Delayed ON Timer is set by using the remote control, the unit will start operate slightly before the set time, so that the room will reach nearly to the set temperature by the desired time.
For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time. For Heating mode, the operation will start 30 minutes before the set time. For Automatic mode, the indoor fan will operate at SLo speed for 20 seconds to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time. (If less than 15 minutes remote to the set time at the time that the time is set, operation will commence at the set time, with no preparatory operation place.)

9) Anti-Freezing Control

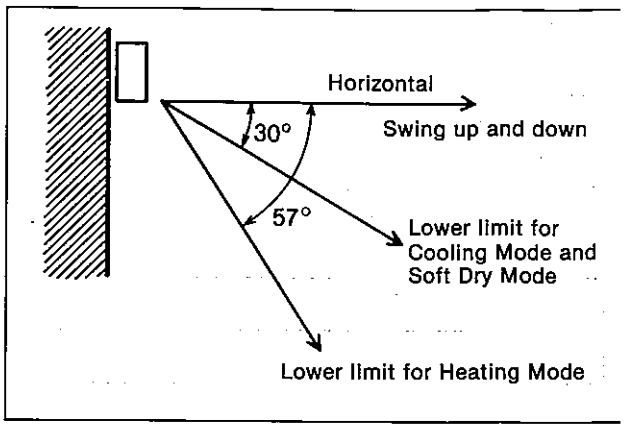
(1) If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes, the thermostat turns off to protect the indoor heat exchanger from freezing. The fan speed setting remains the same. (Operation)
(2) Cooling operation recommences when the heat excahnger temperature rises to 10°C or more. (Recovery)
However, Time Delay Safety Control function is valid.



10) Airflow Direction Control

① Airflow Direction Auto-Control

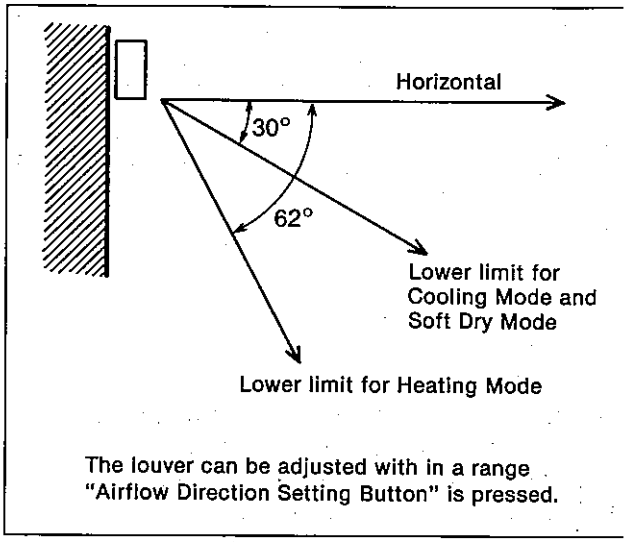
- When set at Airflow Direction Auto-Control with remote control, the louver swings up and down as shown in the diagram.
- The louver does not swing when the Indoor Fan stops during operation.
- When stopped with remote control, the discharge vent is closed with the louver.



※ The left and right airflow direction louvers can b adjusted manually.

② Airflow Direction Manual Control

- When the airflow direction set button is pressed, the automatic airflow is released and the airflow direction lover move up and down in the range shown in the diagram.
  The louver can be stopped by releasing the button at the desired louver position.
- When the remote control is used to stop the operation, the discharge vent is closed with airflow direction louver.



※ The left and right airflow direction louvers can b adjusted manually.

Installation

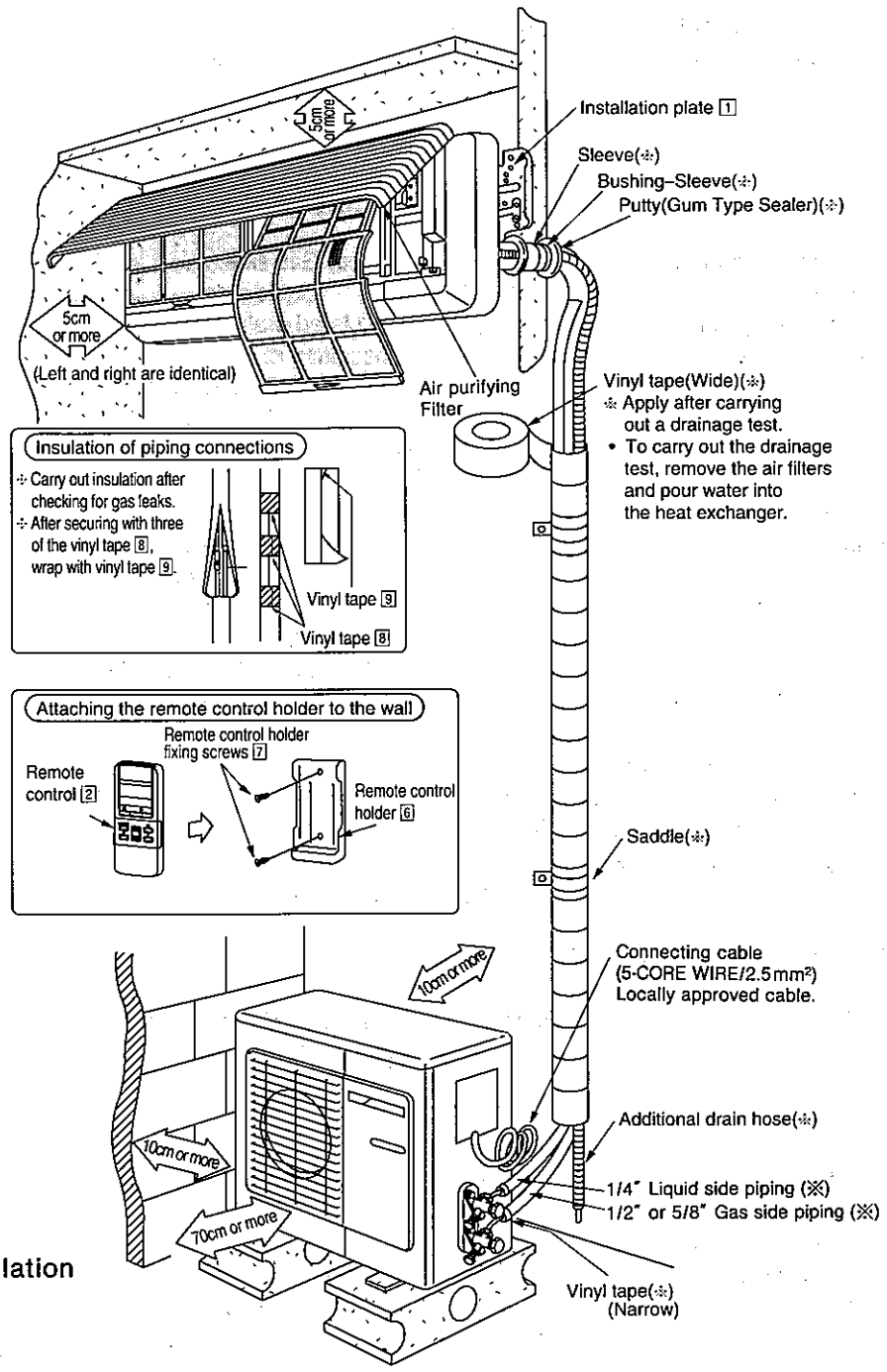
Accessories packed together with the indoor unit

No.	Accessory part	Qty.
1	Installation plate	1
2	Remote control	1
3	Battery	2
4	Spacer	1
5	Installation plate fixing screw	6
6	Remote control holder	1
7	Remote control holder fixing screw	2
8	Vinyl tape	3
9	Vinyl tape	1
10	Clamping cover of piping	1
11	Piping cover fixing screw	4
12	Air purifying filter	2

Accessories Flaring piping kit

CZ-4F3, 5, 7, 10, 12, 15AEP
CZ-52F3, 5, 7, 10, 15AEP
Contents
① Bushing-Sleeve
② Sleeve
③ 1/4″ flared pipe with insulation
④ 1/2″ or 5/8″ flared pipe with insulation
⑤ Additional drain hose
⑥ Vinyl tape (wide)
⑦ Saddle (6 pieces)
⑧ Screw-Saddle (6 pieces)
⑨ Vinyl tape (narrow)
⑩ Putty (Gum Type Sealer)

Installation Parts you should purchase (※)


5cm or more
5cm or more
(Left and right are identical)
Installation plate 1
Sleeve(※)
Bushing-Sleeve(※)
Putty(Gum Type Sealer)(※)
Air purifying Filter
Vinyl tape(Wide)(※)
※ Apply after carrying out a drainage test.
• To carry out the drainage test, remove the air filters and pour water into the heat exchanger.
Insulation of piping connections
※ Carry out insulation after checking for gas leaks.
※ After securing with three of the vinyl tape 8, wrap with vinyl tape 9.
Vinyl tape 9
Vinyl tape 8
Attaching the remote control holder to the wall
Remote control holder fixing screws 7
Remote control 2
Remote control holder 6
Saddle(※)
10cm or more
Connecting cable (5-CORE WIRE/2.5mm²) Locally approved cable.
10cm or more
70cm or more
Additional drain hose(※)
1/4″ Liquid side piping (※)
1/2″ or 5/8″ Gas side piping (※)
Vinyl tape(※) (Narrow)

※ This illustration is for explanation purposes only. The indoor unit will actually face a different way.

Outline of Installation

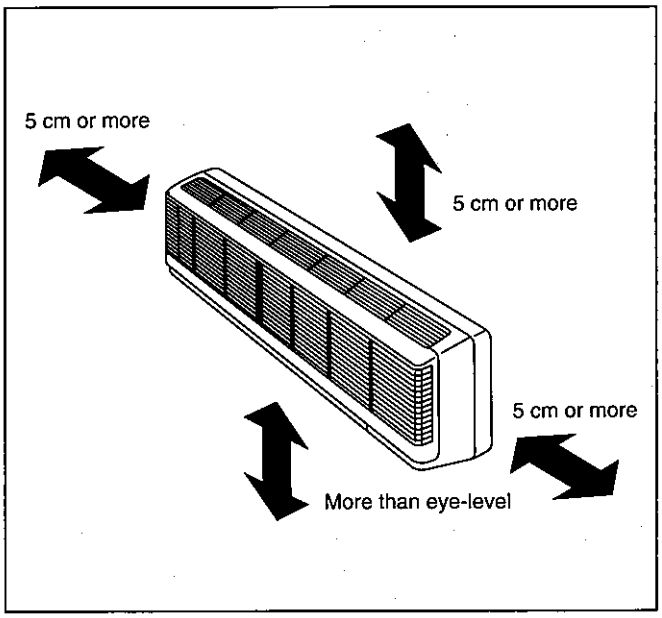
Installation works	Installation Parts	Required tools
1. Installation of Indoor, Outdoor unit		
1) Select the best location..... Page 16 2) Indoor unit Installation..... Page 17	• Installation Plate • Four Type "A" screws	• a level • Phillips screw driver • Electric drill, hole core drill. (φ70mm) • Side cutter or Electrical pliers
2. Piping and Drainage of Indoor unit		
1) Preparation of Piping.....Page 18 2) Connection of Piping....Page 19~23 For the right piping.....Page 19~20 For the left piping.....Page 20~23	• Pipes: Gas side..... 1/2" or 5/8" Liquid side..... 1/4" • Insulated drain hose • Insulation materials ★(CZ-4F3, 5, 7, 10, 12, 15AEP CZ-52F3, 5, 7, 10, 15AEP)	• Flaring Tools set • Specified Torque Wrenches 18N•m.....Liquid side 55N•m.....Gas side pi 65N•m.....Gas side pi Spanner.....Half union
3. In case of the Embedded piping		
For the embedded piping..... Page 24~25	• Pipes: Gas side..... 1/2" or 5/8" Liquid side..... 1/4" • Insulated drain hose • Insulation materials ★(CZ-4F3, 5, 7, 10, 12, 15AEP CZ-52F3, 5, 7, 10, 15AEP)	• Flaring Tools set • Specified Torque Wrenches 18N•m.....Liquid side 55N•m.....Gas side pi 65N•m.....Gas side pi Spanner.....Half union
4. Connecting Piping and the cable to Outdoor unit		
1) Connecting the piping to the Outdoor unit..... Page 26 2) Connecting the cable..... Page 26 3) Disposal of outdoor unit drain water..... Page 26	• Additional Drain hose (Outer Dia..... 15.5mm) • Connecting cable (5-core wire/2.5mm²) Locally approved cable.	• Specified Torque Wrenches 18N•m.....Liquid side 55N•m.....Gas side pi 65N•m.....Gas side pi
5. Evacuation of Installation		
1) Evacuation..... Page 27	• Insulation Material provided • Plastic Band provided	• Hexagonal Wrench (4mm) • Gas-leak Detector • Charge set • Vacuum pump
6. Checking the Drainage and Connecting the cable to Indoor unit		
1) Checking the Drainage..... Page 28 2) Connect the inside/outside connecting cable..... Page 29 3) Connect the cable to the indoor unit..... Page 29 4) Form the piping..... Page 30	• Connecting cable (5-core wire/2.5mm²) Locally approved cable.	• a glass of water • Phillips screw driver
7. Test running		
Connect the Power Supply..... Page 31 Evaluation of the Performance..... Page 31	• Two Type "B" screws	• Circuit Breaker or Time Delay f (Consult an Electrician) • Operating Instructions • Thermometer

1. Installation of Indoor, Outdoor unit

1) Select the best location

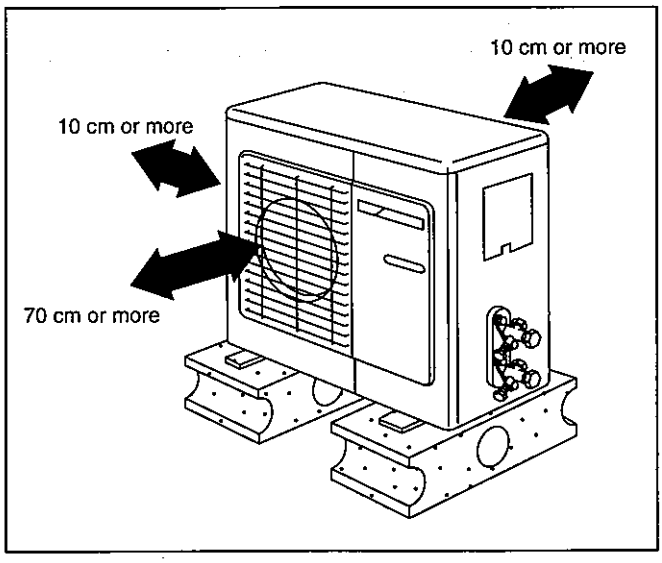
1. Indoor unit

- There should not be any heat source or steam near the unit.
- There should not be any obstacles to prevent the air circulation.
- A place where air circulation in the room will be good.
- A place where drainage can be easily obtained.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence, or other obstacles.
- From the floor, the height should be more than eye-level.



2. Outdoor unit

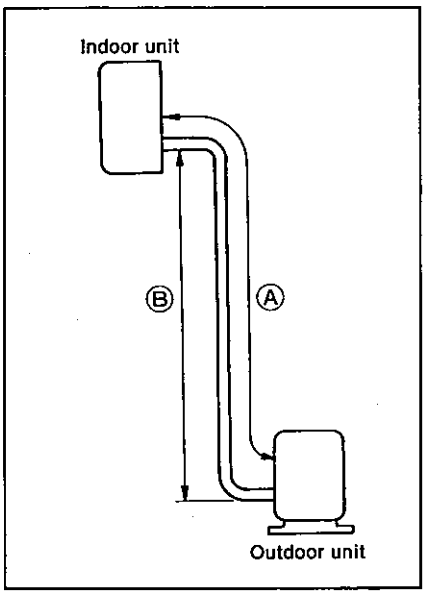
- If an awning is built over the unit to prevent direct sunlight or rain exposure, be careful that heat radiation from the condenser is not restricted.
- There should not be any animals or plants which could affected by hot air discharged.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence, or other obstacles.



3. Piping length and the elevation

Model		Pipe Size		Max. Piping Length Ⓐ (m)	Max. Elevation Ⓑ (m)	Rated		Additional Refrigerant (g/m)
Outdoor	Indoor	GAS	LIQUID			Length (m)	Elevation (m)	
CU-1873K	CS-1873K	1/2″	1/4″	25	15	7	5	20
CU-2473K	CS-2473K	5/8″	1/4″	25	15	7	5	30

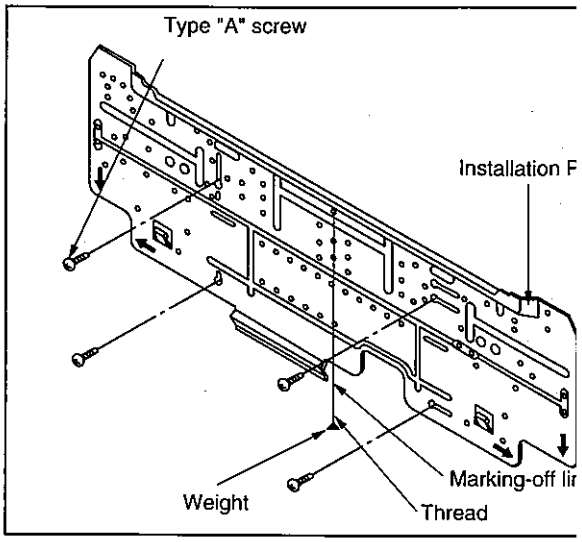
- If CS/CU-1873K is installed at a distance of 25m, 360g of refrigerant should be added ..... (25-7)×20g
- If CS/CU-2473K is installed at a distance of 25m, 540g of refrigerant should be added ..... (25-7)×30g



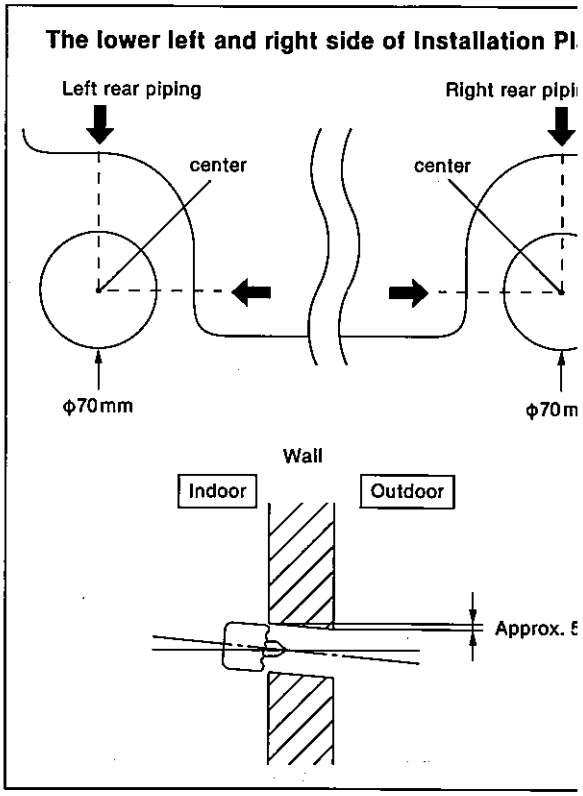
2) Indoor unit Installation

The mounting wall is strong and solid enough to prevent it from the vibration.

1. **Mount the installation plate on the wall with four Type "A" screws.**
   (If mounting the unit on the concrete wall, consider using anchor bolts.)
   - Always mount the Installation Plate horizontally by aligning the marking-off line with the thread and using a level.



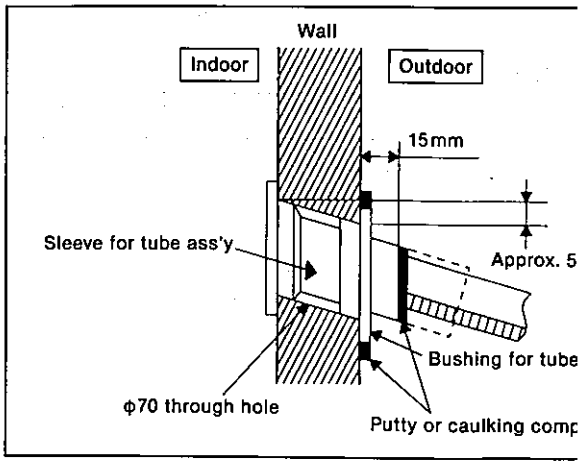
2. **Drill the piping hole with 70mm dia. hole-core drill.**
   - Line according to the arrows marked on the lower left and right side of the Installation Plate.
     The meeting point of the extended line is the center of the hole.
   - Drill the Piping hole at either the right or the left and the hole should be slightly slant to the outdoor side.



3. **To drill a hole in the wall and install a sleeve for tube ass'y.**
   - Drill ϕ70mm hole sloping downward toward the outside of the wall.
   - Insert the sleeve through the hole.
   - Fix the bushing to the sleeve.
   - Extrude 15mm of the sleeve then cut.

Caution:
When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cables.

   - Finish by sealing the sleeve with putty or caulking compound at the final stage.



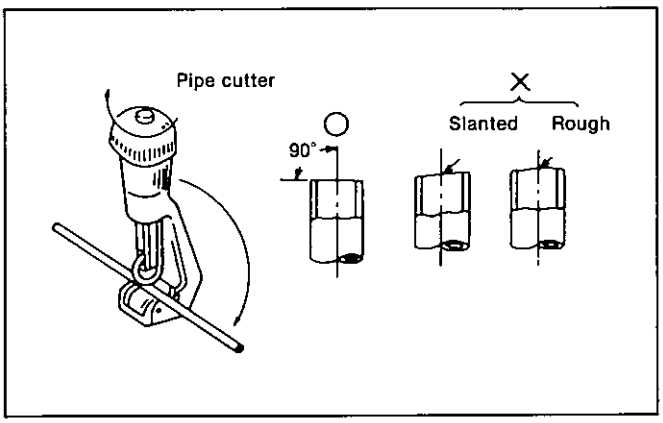
2. Piping and Drainage of indoor unit

1) Preparation of piping

1. Cut the pipes and the cable

- Use the accessory piping kit or the pipes purchased locally.
- Measure the distance between the indoor and the outdoor unit.
- Cut the pipes a little longer than measured distance.
- Cut the cable a 1.5m longer than the pipe length.

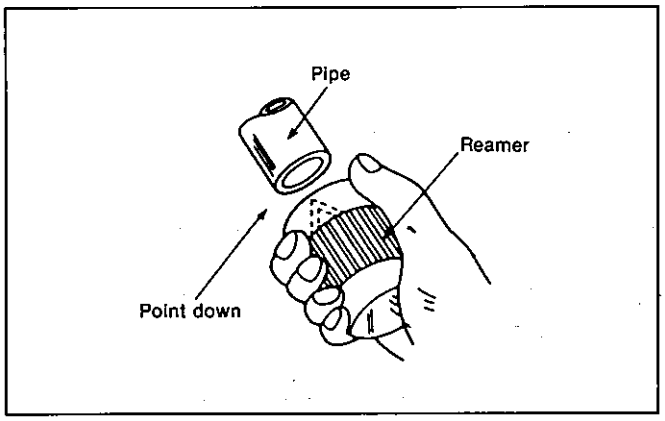
Model	Pipe Size	
	GAS	LIQUID
1873K	1/2"	1/4"
2473K	5/8"	1/4"



2. Remove burrs

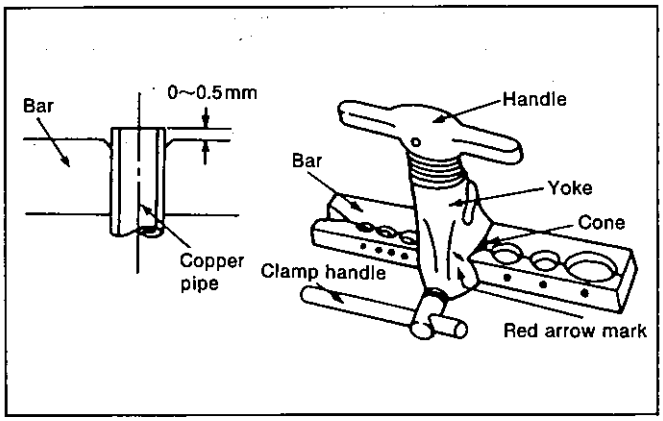
- Remove burrs from cut edges of pipes.
- Turn the pipe end down to avoid the metal powder entering the pipe.

Caution:
If burrs are not removed, they may cause a gas leakage.

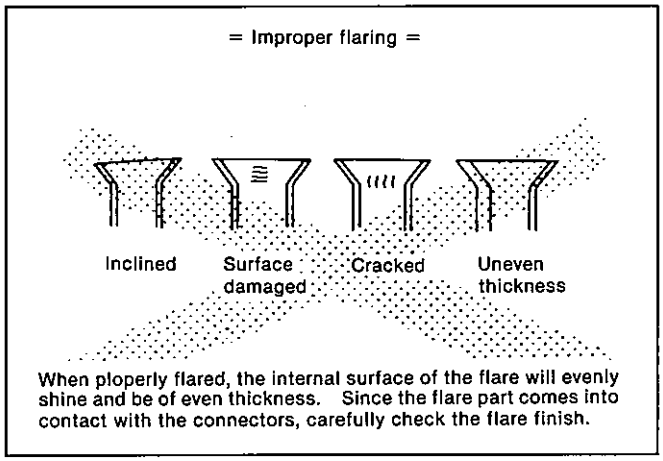


3. Flaring the pipes

- Insert the flare nuts, mounted on the connection ports of both indoor and outdoor unit, onto the copper pipes.
- Fit the copper pipe end into the Bar of flare tool about 0-0.5mm higher. (See illustration.)
- Flare the pipe ends.



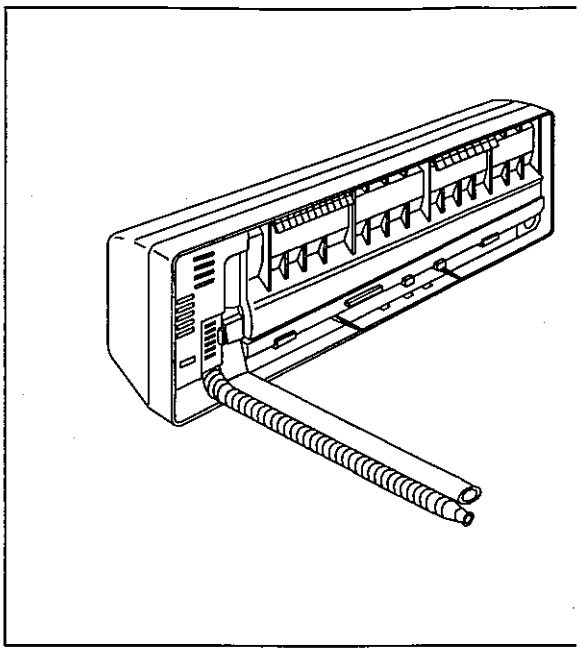
4. Tape the flaring portion to protect it from the dust or damages.



When ploperly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connectors, carefully check the flare finish.

2) Connection of Piping

1. Remove the indoor tubing with Drain hose to the hole.



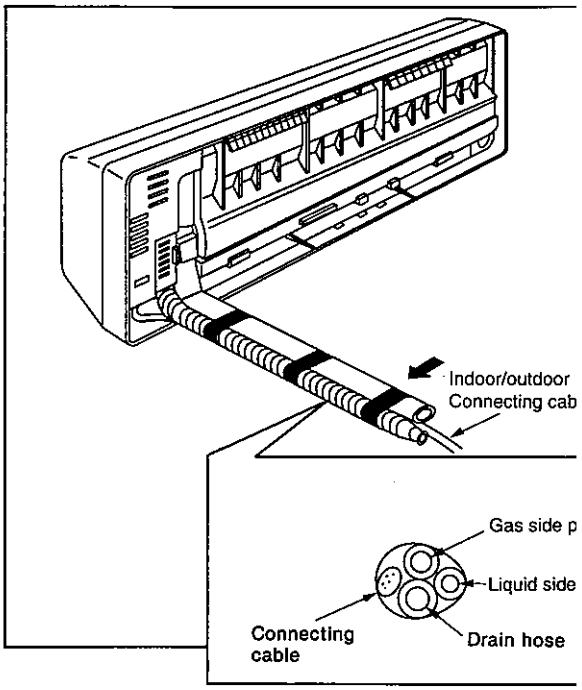
For the right piping

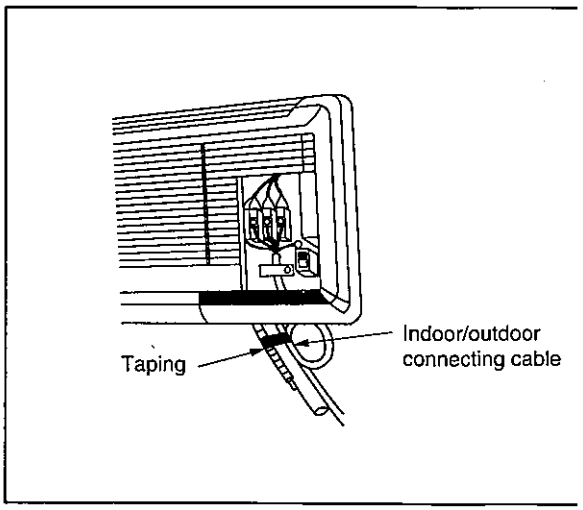
In case of the left piping, refer Page 20~23.

1. Route the tubing and the drain hose straight backwards.

2. Insert the connecting cable into the indoor unit through the hole.
- Connect the cable to the indoor unit.
- Make a small loop with the cable for easy connection later.

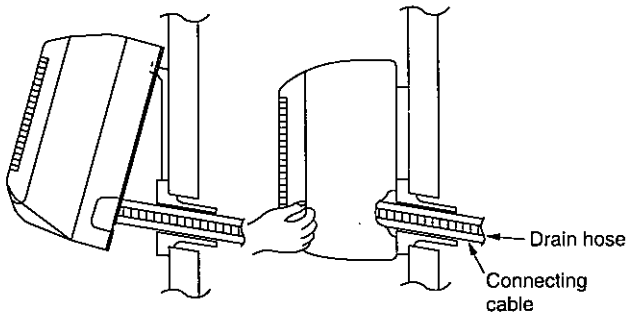
3. Tape the tubing, drain hose and the connecting cable.





4. Indoor unit installation.

- Hook the indoor unit onto the upper portion of installation plate. (Engage the two hooks of the rear top of the indoor unit with the upper edge of the installation plate.)
  Ensure the hooks are properly seated on the installation plate by moving it in left and right.

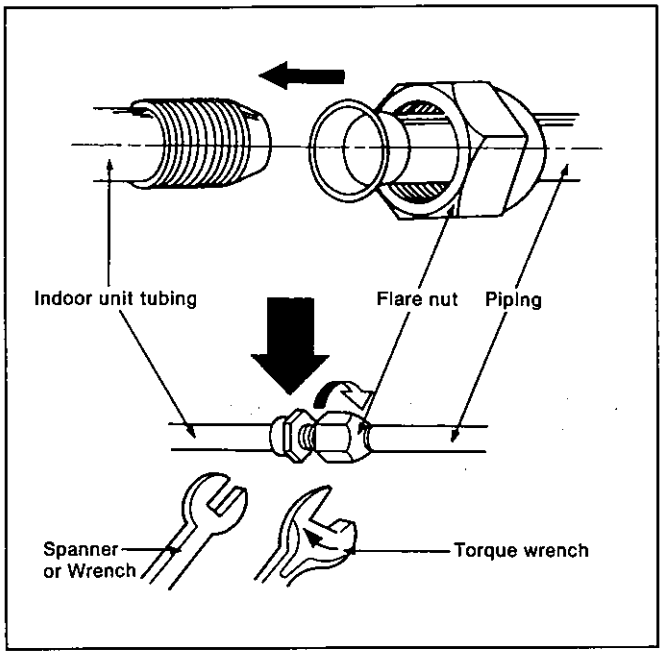


Press the lower left and right side of the unit against the Installation Plate until the hooks engages with their slots (sound click).

5. Connecting the pipings to the indoor unit

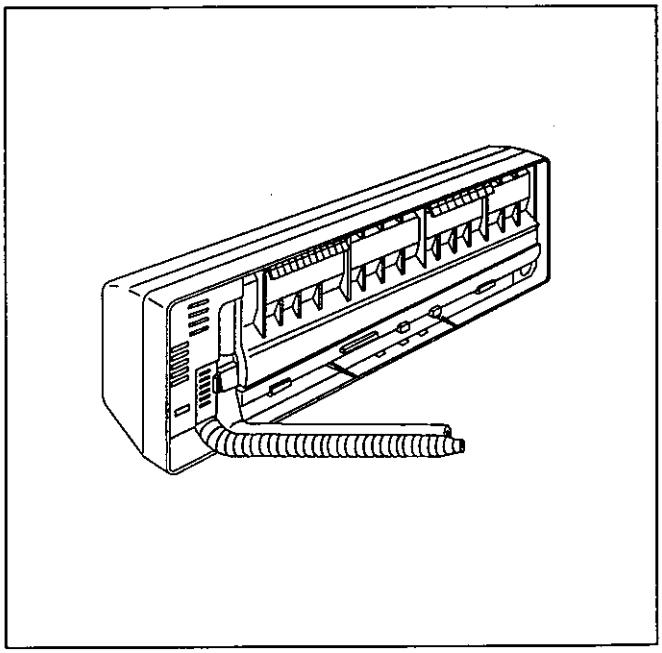
- Align the center of the pipings and sufficiently tighten the flare nut with fingers.
- Finally, tighten the flare nut with torque wrench until the wrench clicks.
  When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.

Pipe Size	Torque
Liquid Side 1/4″	18N•m
Gas Side 1/2″	55N•m
Gas Side 5/8″	65N•m

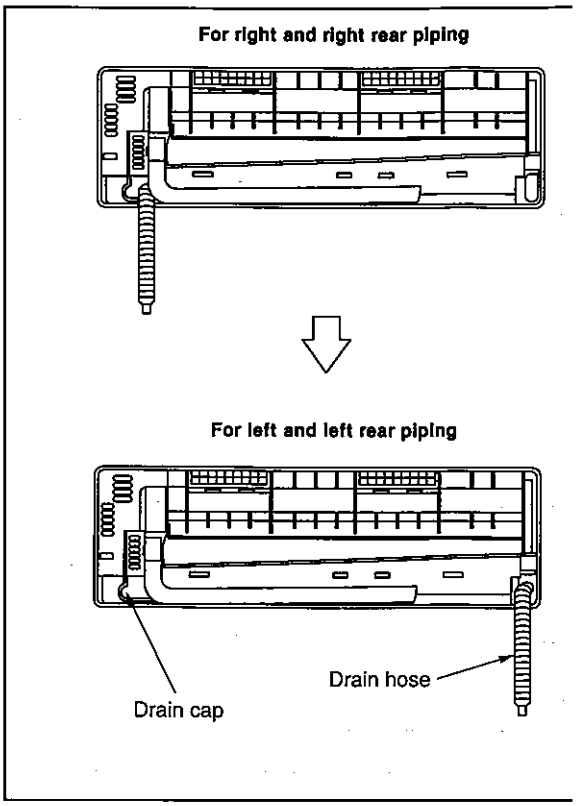


For the left piping

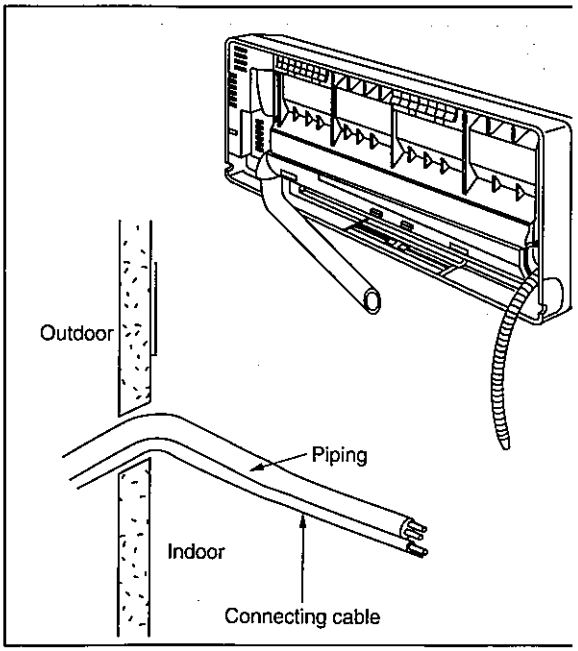
1) Route the indoor tubing with the drain hose to the hole.



1. **Exchange the Drain hose and the cap.**

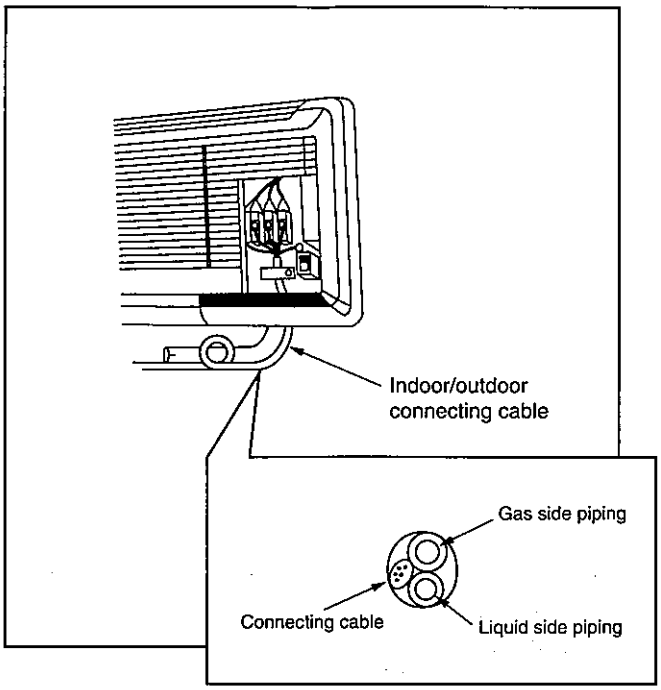


2. **Insert the piping and connecting cable to indoor side through the hole.**



3. **Insert the connecting cable into the indoor unit**
   - Connect the cable to the indoor unit.
   - Make a small loop with the cable for easy connection later.

4. **Tape the tubing, drain hose and the connecting cable.**

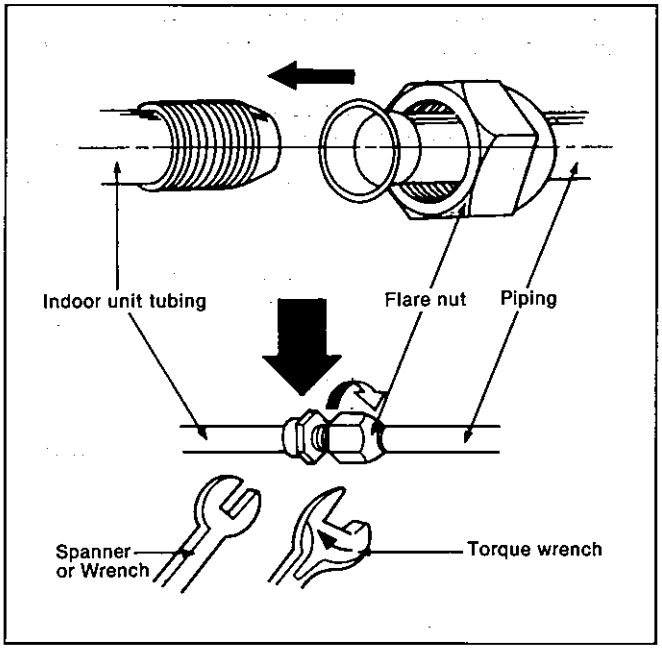


2) Connecting the piping to the Indoor unit

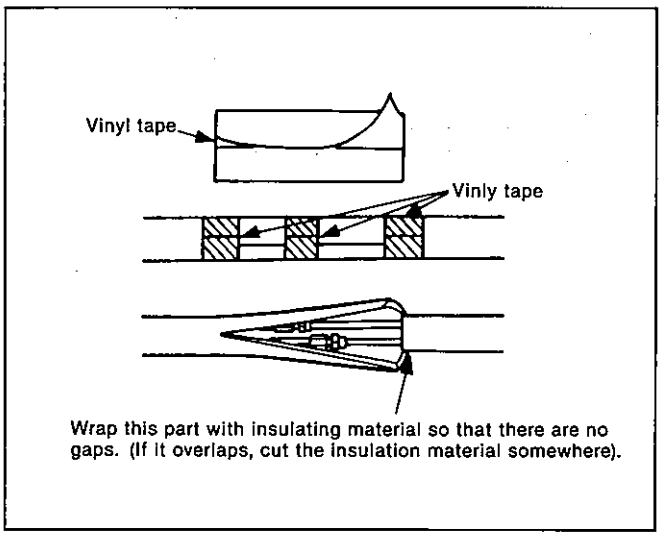
1. **Align the center of the pipings and sufficiently tighten the flare nut with fingers.**

2. **Finally, tighten the flare nut with torque wrench until the wrench clicks.**
   - When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.

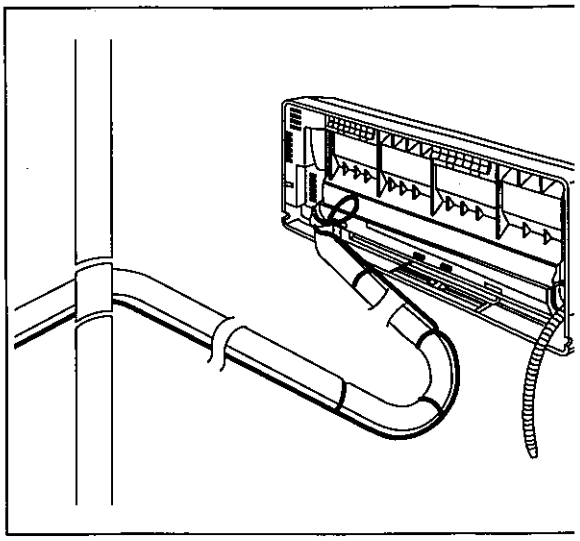
Pipe Size	Torque
Liquid Side 1/4″	18 N•m
Gas Side 1/2″	55 N•m
Gas Side 5/8″	65 N•m



3. **After inspecting for gas leaks, seal with vinyl tape so that there are no gaps as shown in the drawing on the right.**


Vinyl tape
Vinly tape
Wrap this part with insulating material so that there are no gaps. (If it overlaps, cut the insulation material somewhere).

4. Set the pipings and the connecting cable to the back of the chassis with the tubing holder.

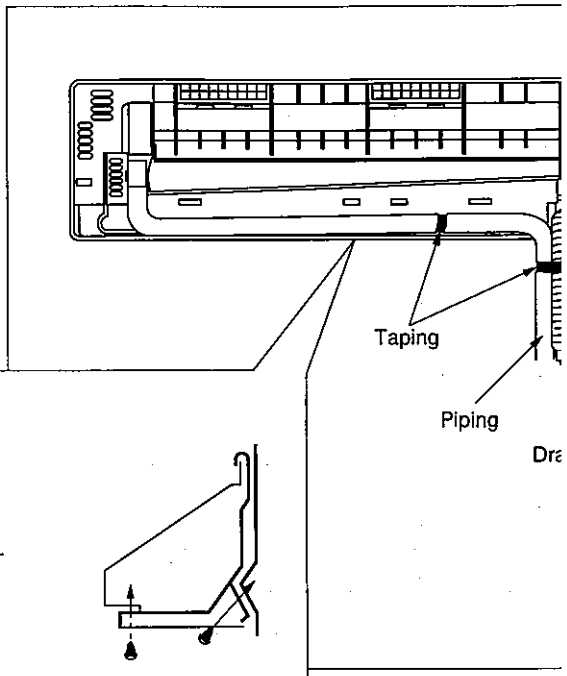


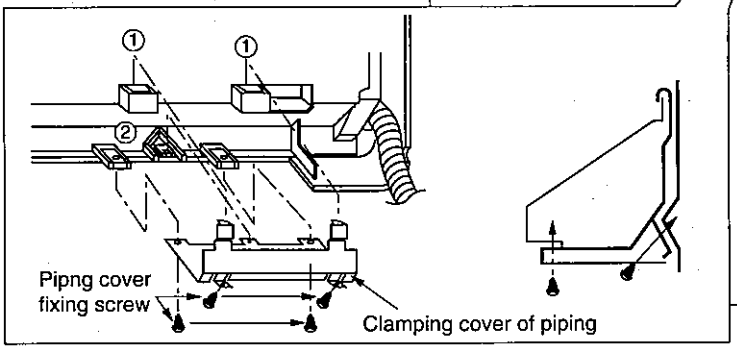
After setting the clamping cover of piping in the hooks in the direction shown by the arrows and in the order shown by ① and ② to fix it temporarily, tighten the piping cover fixing screw to fix it securely.

NOTE

In order to prevent looseness of the bottom part of the unit from the installation plate, fix it securely to the bottom part of the installation plate with the piping cover fixing screws.

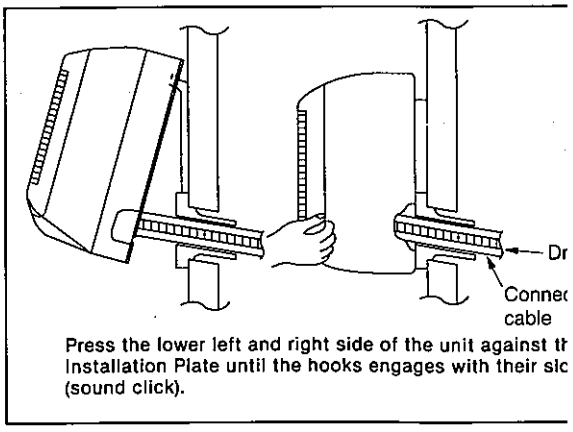
- To remove the clamping cover of piping, refer to the directions for installation and follow the procedures in reverse order.





5. Indoor unit installation

- Hook the indoor unit onto the upper portion of installation plate. (Engage the two hooks of the rear top of the indoor unit with the upper edge of the installation plate.)
  Ensure the hooks are properly seated on the installation plate by moving it in left and right.



Press the lower left and right side of the unit against th Installation Plate until the hooks engages with their slo (sound click).

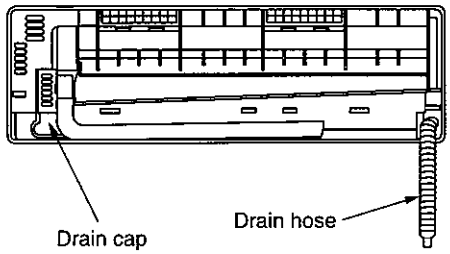
3. In case of the Embedding piping

Follow the same procedure for left rear and left pipings.

1. Replace the drain hose

Replace the drain hose and drain cap.

- Figure from the back of the indoor unit after installation. (For the left and left rear pipings.)

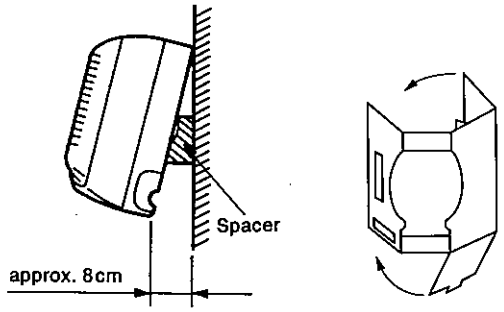


2. Bend the embedding piping

- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

3. Install the indoor unit.

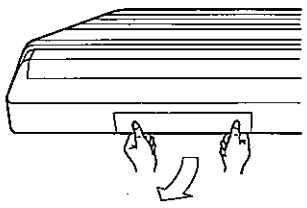
Spacer assembly procedure.
Bend along the fold lines as shown, and secure with tape.



4. Remove the bottom cover of indoor unit.

- **How to remove the bottom cover of indoor unit**

Hold the bottom cover as shown in the figure at left, pull each side of the bottom cover one by one in the direction of the arrow and remove it.



5. Cut and flaring the embedding pipings.

- When determining the dimensions of the piping, slide the unit all the way to the left on the installation plate.
- Refer to the section "Cut and flaring the piping" in the directions for the outdoor unit.

6. Pull the connecting cable into the indoor unit.

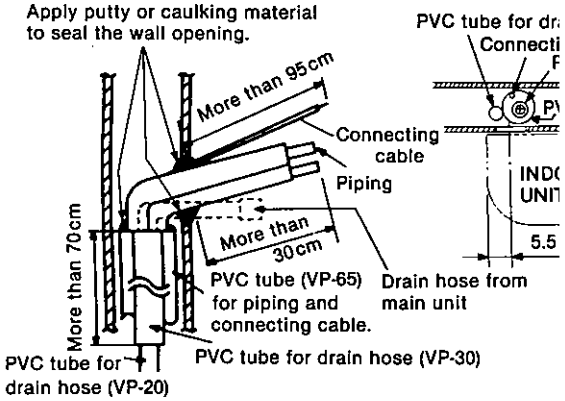
- As with the right and right bottom pipings, this can be completed without removing the Front Grille.

7. Connect the piping

- Refer to the section "Connecting the piping" in the directions for the outdoor unit. (See page 22)

(The following should be done after connecting the piping to Outdoor unit and checking the gas-leakage.)

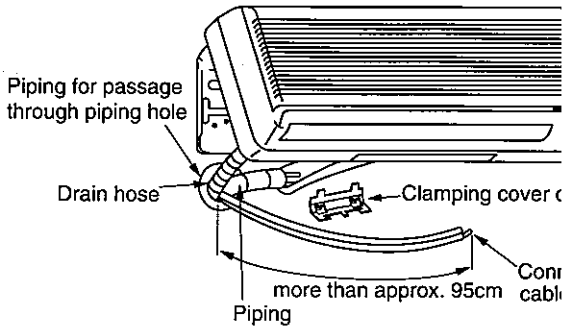
In case of the embedding piping, how to pull the piping a drain hose out.


Apply putty or caulking material to seal the wall opening.
More than 95cm
Connecting cable
Piping
More than 70cm
More than 30cm
PVC tube (VP-65) for piping and connecting cable.
Drain hose from main unit
PVC tube for drain hose (VP-30)
PVC tube for drain hose (VP-20)
PVC tube for dr
Connecti
5.5

(Be sure to insulate the PVC tube for drain hose.)

8. Insulate and finish the piping

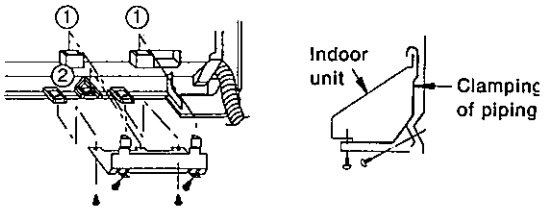
- Refer to the sections "Insulate the piping connections" in the installation diagram for the indoor/outdoor unit. (See front page or page 22)



9. Install clamping cover of piping and bottom cover for indoor unit.

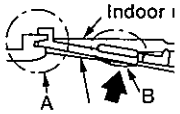
- Refer to the figure at right.
- Refer to page 9 regarding, the explanation of "How to install the clamping cover of piping".

- How to install the clamping cover piping



- How to install the bottom cover for indoor unit.

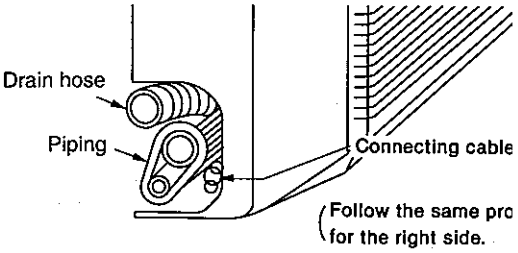
1. As shown in the figure at right, affix the hook at A.
2. Hold the both side of the bottom cover at B with the thumbs and press each side down one by one in the direction of the arrow and install it.



Bottom cover for indoor

10. Secure the indoor unit. **[Reference]**

In case of left piping, how to insert the connecting cable drain hose.



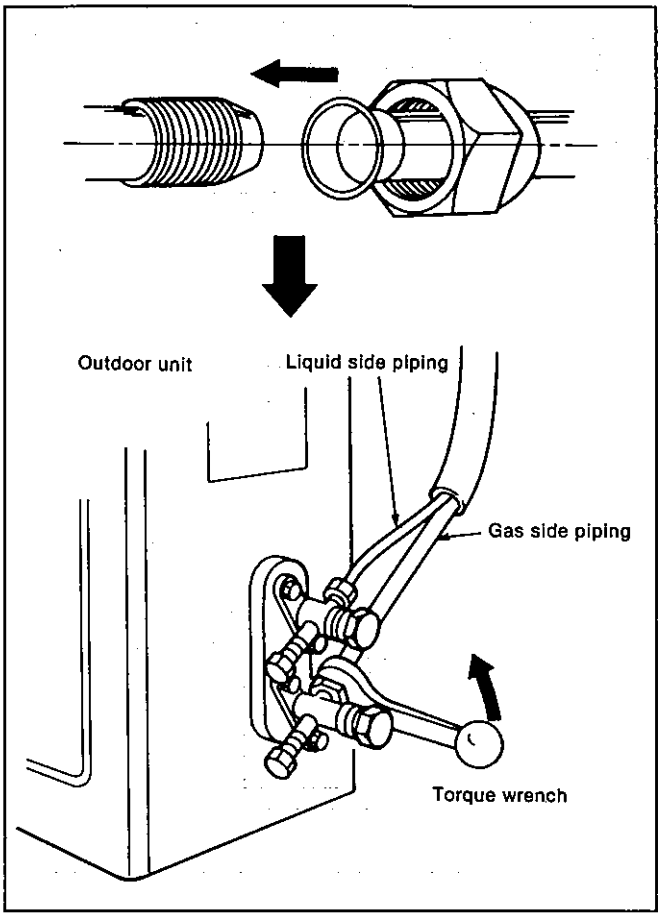
4. Connecting Piping and the cable to Outdoor unit

1) Connecting the piping to the Outdoor unit

1. **Align the center of the piping and sufficiently tighten the flare nut with fingers.**

2. **Finally, tighten the flare nut with torque wrench until the wrench clicks.**
   - When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.

Pipe Size	Torque
Liquid Side 1/4″	18N•m
Gas Side 1/2″	55N•m
Gas Side 5/8″	65N•m

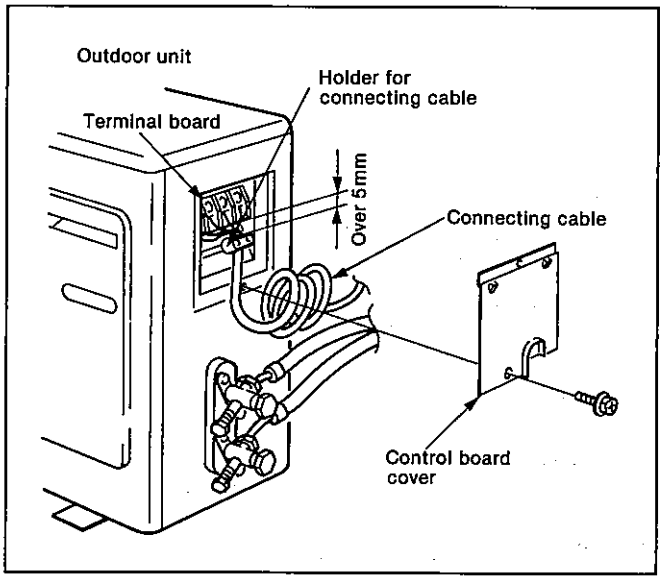


2) Connecting the cable

1. **Remove the control board cover from the unit by loosening the screw.**
2. **Connect the locally approved cable (2.5mm²) to the terminals on the control board individually.**

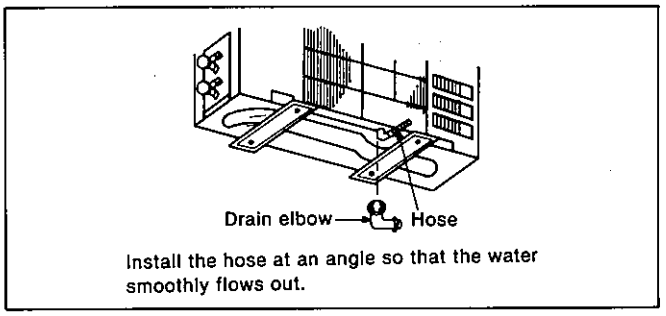
Terminals on the outdoor unit	1	2	3	4	⏚
Colour of wires					
Terminals on the indoor unit	1	2	3	4	⏚

3. **Secure the cable onto the control board with the holder (clamper).**
4. **Attach the control board cover to the original position with the screw.**



3) Disposal of outdoor unit drain water

- If a drain elbow is used, the unit should be placed on a stand which is taller than 3cm.
- If the unit is used in an area where temperature falls below 0°C for 2 or 3 days in succession, it is recommended not to used a drain elbow, for the drain water freezes and the fan will not rotate.

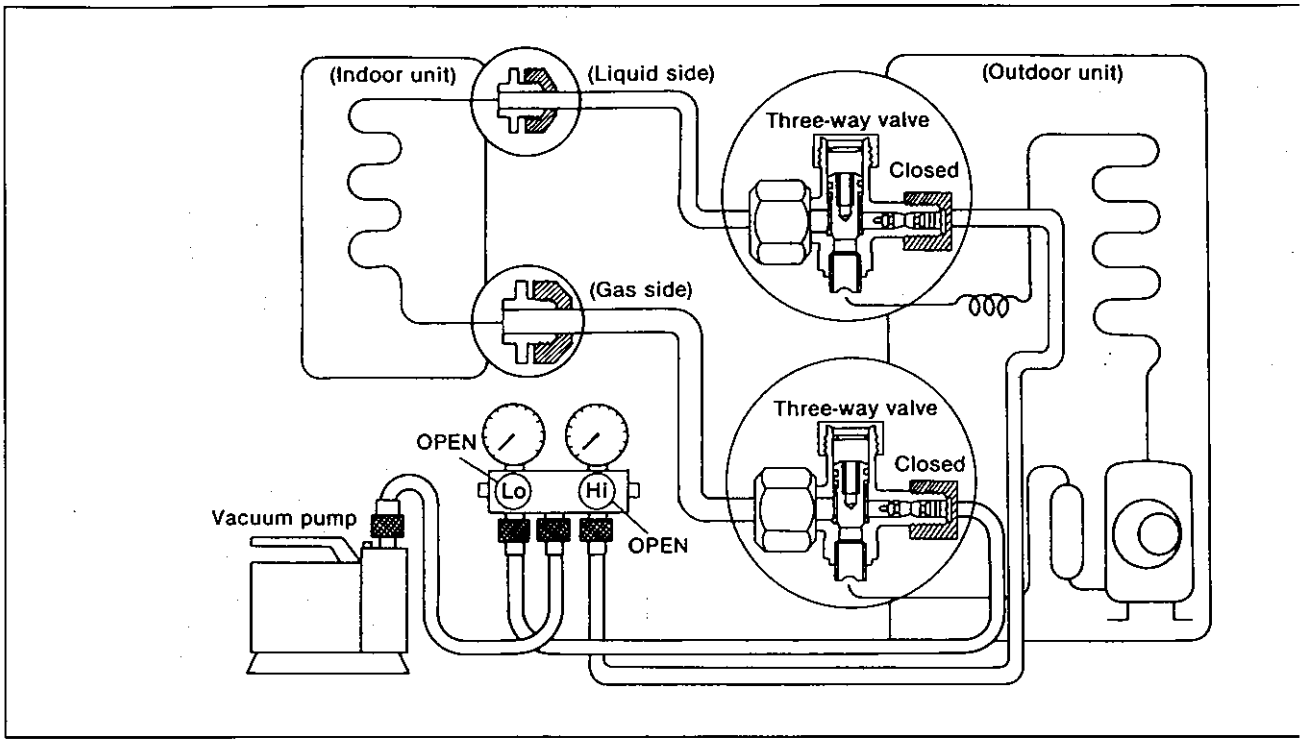


Install the hose at an angle so that the water smoothly flows out.

5. Evacuation of Installation

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.

If air remains in the indoor unit and refrigeration pip affect the compressor, reduce the cooling capacity could lead to a malfunction.



Service port cap

Be sure, using a torque wrench to tighten the service port cap (after using the service port), so that it prevents the g leakage from the refrigeration cycle.

Procedure:

(1) Connect a charging hose with a push pin to the Low and High sides of a charging set and the service port of the 3-way valves.
- Be sure to connect the end of the charging hose with the push pin to the service port.

(2) Connect the center hose of the charging set to a vacuum pump.

(3) Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0cmHg (0MPa) to −76cmHg (−0.1MPa). Then evacuate the air for approximately ten minutes.

(4) Close the valve of both the Low and High sides of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.
BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.

(5) Disconnect the charging hose from the vacu pump and from the service ports of both of 3-way valves.

(6) Tighten the service port caps of both of the valves at a torque of 18N·m with a torque w

(7) Remove the valve caps of the 3-way valves. Position both of the valves to "open" using hexagonal wrench (4mm).

(8) Mount valve caps onto the both of the 3-wa valves.
- Be sure to check for gas leakage

Caution

If gauge needle does not move from 0cmHg (0MPa) to −76cmHg (−0.1MPa) in step (3) above take the following measures.
If the leaks stop when the piping connections are tightened further, continue working from step (3).
If the leaks do not stop when the connections are retightened, repair the location of leak.

6. Checking the Drainage and Connecting the cable to Indoor unit

1) Checking the Drainage

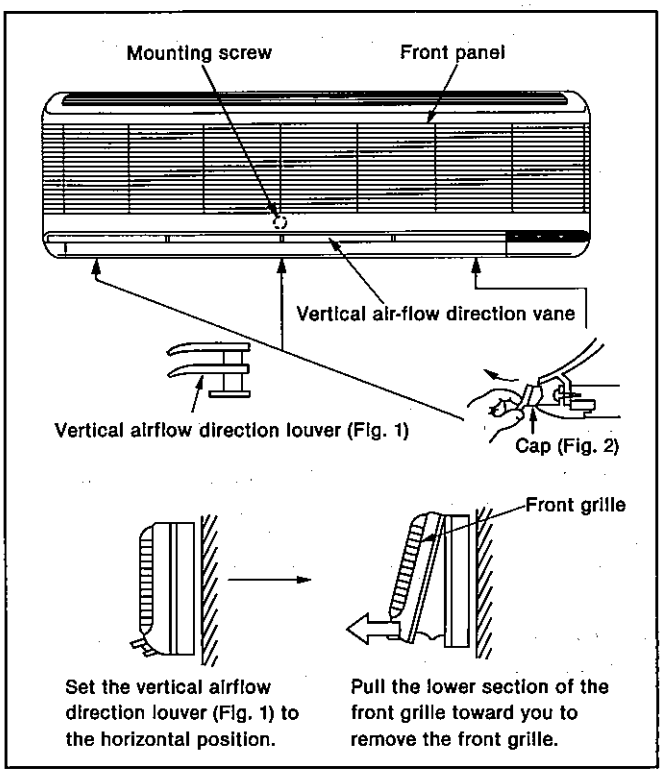
1. Remove the Grille from the cabinet

When removing the front grille for maintenance purposes, etc., carry out the following procedure.

1. Set the vertical airflow direction louver (Fig. 1) to the horizontal position.
2. Remove the three caps (Fig. 2) on the front grille as shown in the illustration at right, and then remove the three mounting screws.
3. Unlock the front panel by pressing the sections at the bottom of the right and left sides.
4. Open the front panel, and then remove a mounting screw.
5. Pull the lower section of the front grille toward you to remove the front grille.

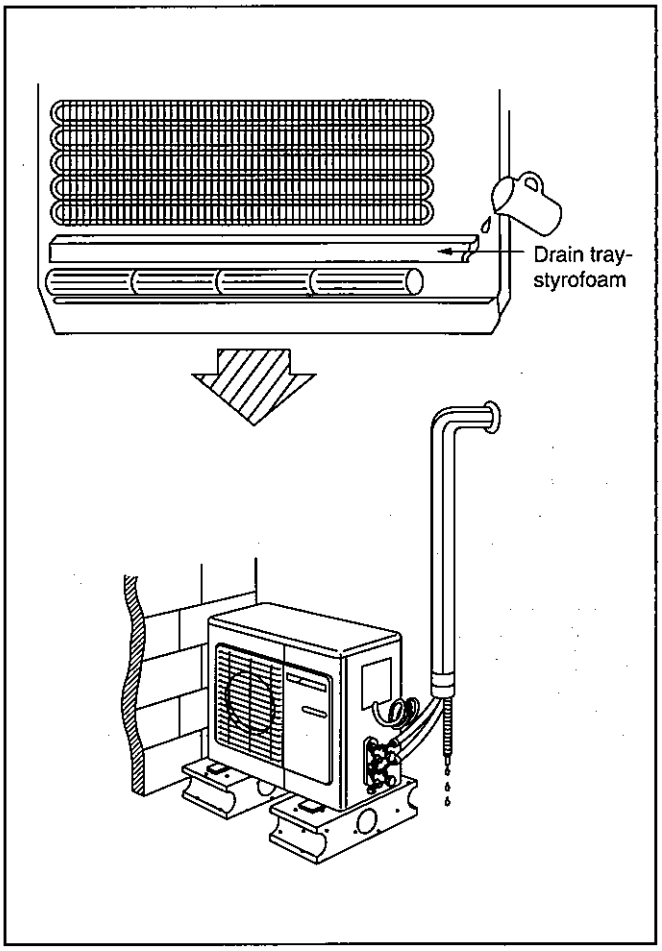
When reinstalling the front grille, first set the vertical airflow direction louver (Fig. 1) to the horizontal position, and then reverse the above steps.

At this time, check to be sure that the fixing tabs on the top inside edge of the grille are securely inserted into their respective slots.


Mounting screw
Front panel
Vertical air-flow direction vane
Vertical airflow direction louver (Fig. 1)
Cap (Fig. 2)
Front grille
Set the vertical airflow direction louver (Fig. 1) to the horizontal position.
Pull the lower section of the front grille toward you to remove the front grille.

2. Check the drainage

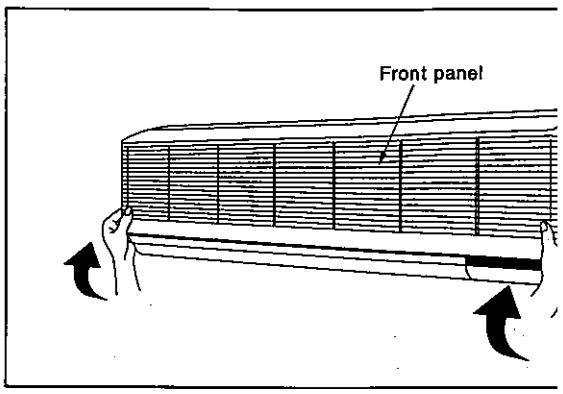
- Pour a glass of water into the Drain tray-styrofoam.
- Ensure that water flows out from drain hose of indoor unit.



2) Connect the inside/outside connecting cable

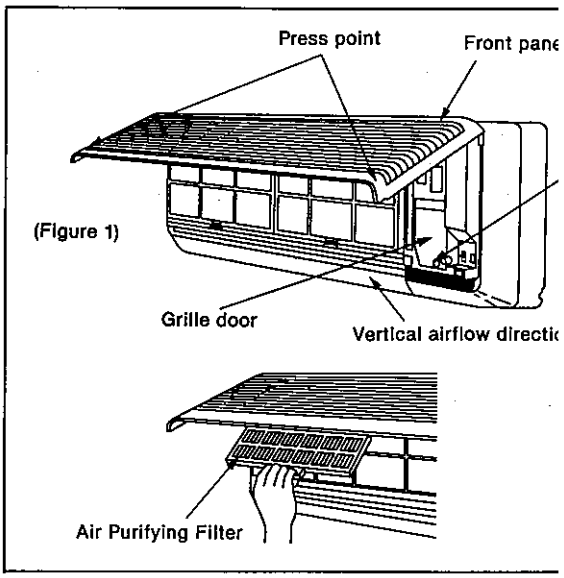
The inside and outside connecting cable can be connected without removing the front grille.

1. Unlock the front panel by pressing the sections at the bottom of the right and left sides. (Figure 1)
2. Open the front panel and then take out grille door by removing the screw.
3. Then, connect the inside/outside connecting cable to the indoor unit.
4. Fix back the Grille Door.



• Installation of the air purifying filters.

① Unlock the front panel by pressing the sections at the bottom of the right and left sides. (Figure 1)
② Open the front panel.
③ Remove the cardboard located at the centre.
④ Remove the air filters.
⑤ Hold the air purifying filters by their tabs and install as shown in the illustration at right.

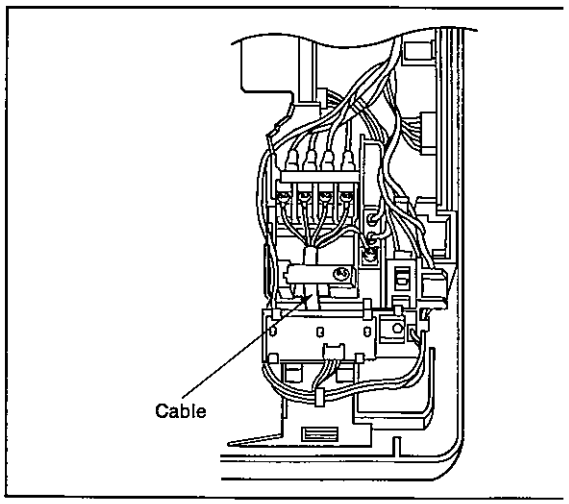


3) Connect the cable to the indoor unit

1. **Connect the locally approved cable (2.5mm²) to the terminals on the control board individually according to the outdoor unit connection.**
   - Ensure the colour of wires of outdoor unit and the terminal No.s are the same to the indoor's respectively.

Terminals on the outdoor unit	1	2	3	4	⏚
Colour of wires					
Terminals on the indoor unit	1	2	3	4	⏚

   - Secure the cable onto the control board with the holder (clamper).



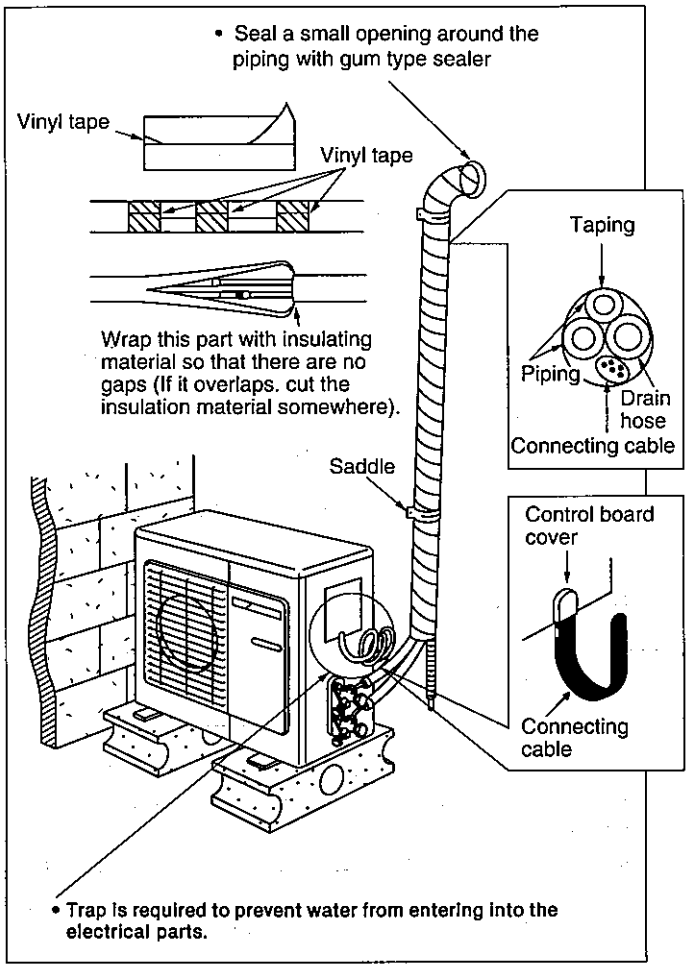
4) Form the pipings

1. **Wrap the connecting portion of indoor unit with the insulation material and secure it with two kind vinyl tape.**
   - If you may connect an additional drain hose, the end of the drain-outlet should keep distance from the ground. (Do not dip it into water, and fix it on the wall to avoid swinging in the wind.)

In case of the Outdoor unit is installed lower position of the Indoor unit.

2. **Tape the piping, drain hose and Connecting Cable from down to up.**

3. **Form the piping gathered by taping along the exterior wall and fix it onto the wall by saddle or equivalent.**

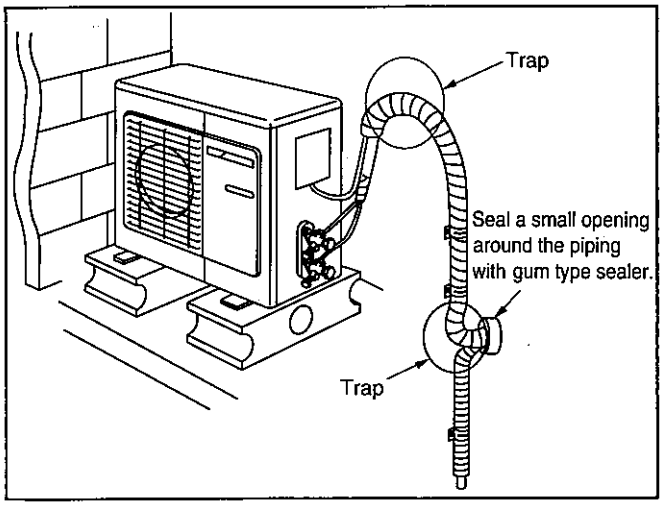

• Seal a small opening around the piping with gum type sealer
Vinyl tape
Vinyl tape
Wrap this part with insulating material so that there are no gaps (If it overlaps. cut the insulation material somewhere).
Taping
Piping
Drain hose
Connecting cable
Saddle
Control board cover
Connecting cable
• Trap is required to prevent water from entering into the electrical parts.

In case of the Outdoor unit is installed upper position of the Indoor unit

2. **Tape the Piping and Connecting cable from down to up.**

3. **In order to prevent water from entering into the room, form a trap with the piping by taping the piping along the exterior wall.**

4. **Fix the piping onto the wall with saddle or bracket.**



7. Test running

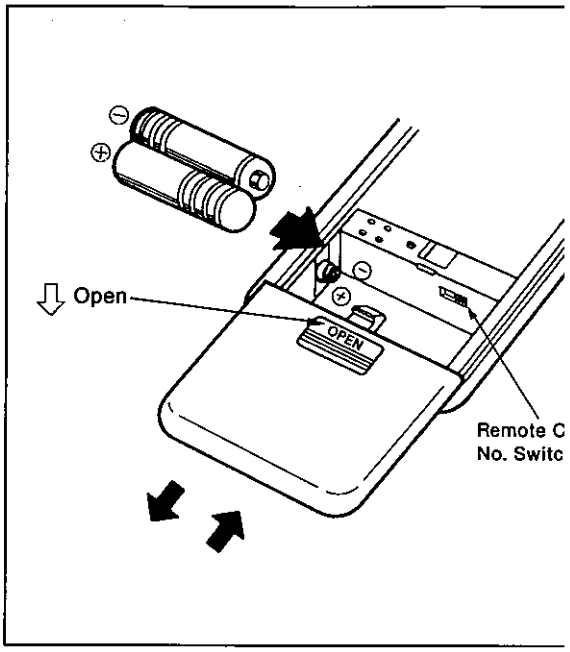
Connect the Power Supply

1. **Connect the power supply cable to independent power supply.**
   - Circuit breaker is required.

2. **Prepare the remote control**
   - Insert two batteries provided.
   - Remove the cover from the back of the remote control.
   - Slide the cover according to the arrow direction.

   Insert the two batteries.
   - (Two R03, UM-4 Panasonic dry-cell batteries or equivalent.)
   - Be sure that the (+) and (−) directions are correct.
   - Be sure that both batteries are new.

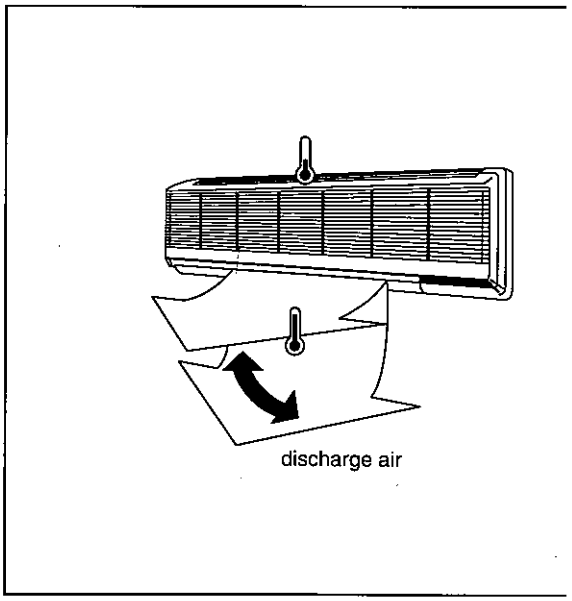
   Re-attach the cover.
   - Slide it back into position.



REMOTE CONTROL NO. SWITCH

- When installing two air conditioners in one room, each air conditioner can be synchronized to the remote controller.
- In order to operate separately, open the rear cover of one of the remote controllers and set the switch to "B". Also, set the remote control No. switch to "B" in the corresponding indoor unit.
  (The switch is located in the control box-sub. of the indoor unit.)

3. **Operate the unit at cooling operation mode for fifteen minutes or more.**



Evaluation of the performance

1. **Measure the temperature of the intake and discharge air.**

2. **Ensure the difference between the intake temperature and the discharge one is more than 8°C.**

CAUTION

There must be a double pole switch with minimum 3mm contact gap in the fixed installation circuit.

This appliance must be installed in accordance with the National Wiring Regulations i.e. the current edition of the I Wiring Regulations.

Connecting cable between indoor unit and outdoor unit shall be approved cable and the size of the conductor shal 2.5mm².

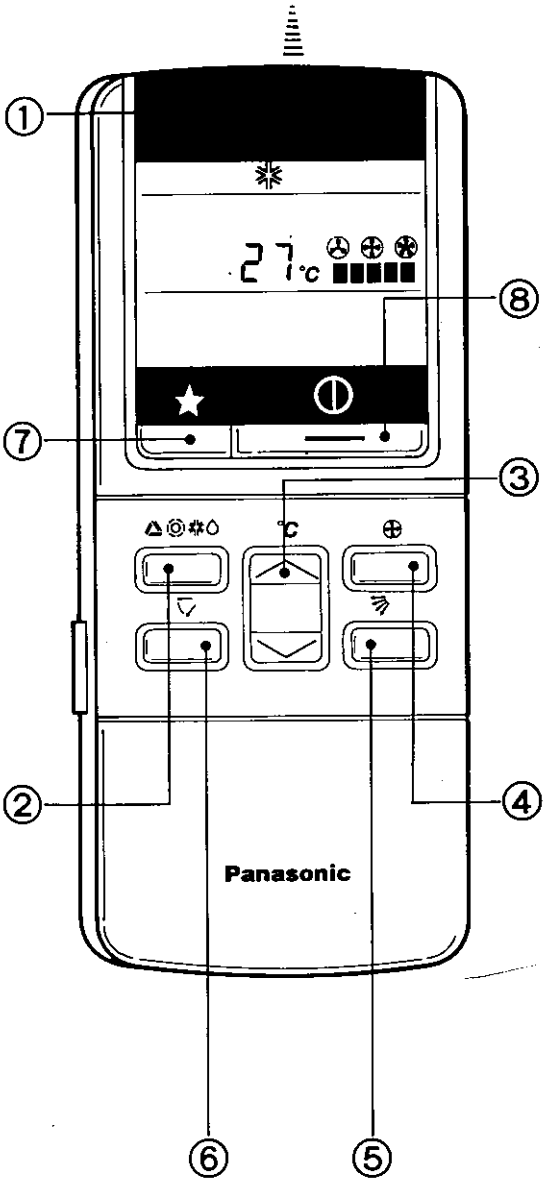
Operating

Name and Function-Remote Control

Remote Control

Signal transmitter

Transmit the signals
to the room air conditioner.



① Operation Display

Displays the operation conditions.

② Operation Mode Selection Button

Used to select the type of operation mode.

- Automatic Operation Mode ..... [1]
- Heating Operation Mode
- Cooling Operation Mode
- Soft Dry Operation Mode ..... [2]

③ Room Temperature Setting Button

Use to adjust the temperature.

④ Indoor Fan Speed Selection Button

Use to select the desired fan speed in three steps from Low to High.

⑤ Airflow Direction Manual Control Button

Press to set the desired airflow direction.

⑥ Airflow Direction Auto-control Button

For Automatic Airflow Direction Control.

⑦ Sleep Mode Auto Operation Button

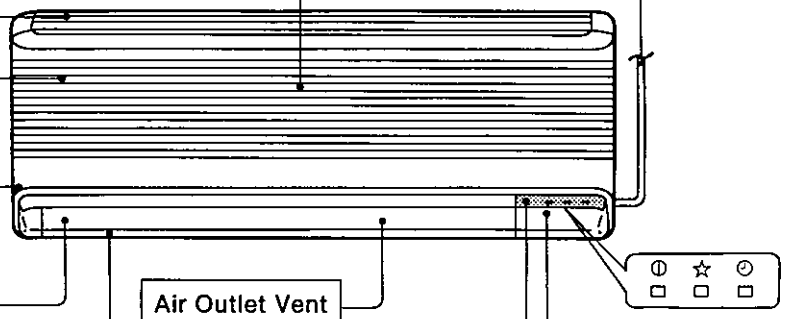
Press this button for Sleep Mode Auto Operation.

⑧ Off/On Button " ⏻ "

Operation will start when this button is pressed, and stop when the button is pressed again.

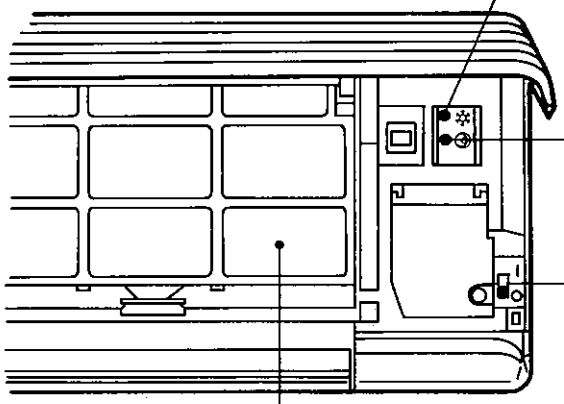
Indoor Unit, Outdoor Unit

Indoor Unit

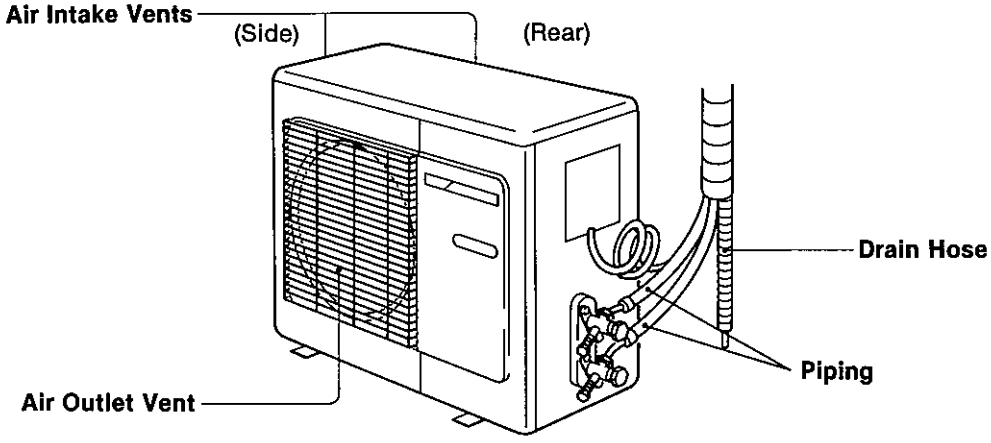

Front Panel
Power Supply Cord
Air Intake Vent
Panel Opener
(Left And Right Sides)
Horizontal Airflow Direction Louver
Air Outlet Vent
Signal Receptor
Operation Indication Lam
Vertical Airflow Direction Louver
(TWIN FLAP)
Receives the signals from the remote control.
(Signal received sound: two short beeps or one long beep)
Illuminates when the air conditi in operation.
(Blinks at the start of automatic operation or defrosting operatic hot start operation in heating m

Indoor unit controls and indicators

Open

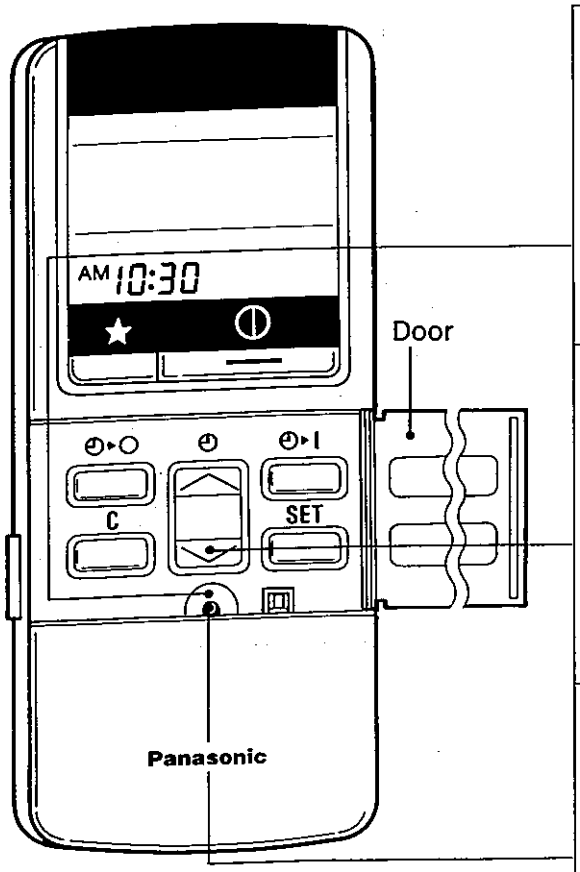

Cooling Test Operation Button
Use when installing and moving.
Normally it should not be used.
Forced Operation Button
Use when the remote control is not used.
Power Switch
Set to "O" (OFF) if the air conditioner is not going to be used for an extended period of time.
Air Filter

Outdoor Unit

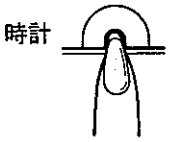


Remote Control

How to set the current time.

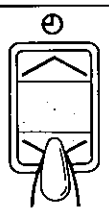


1 Press the Clock 時計 button.



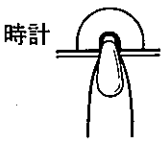
- The letters of AM or PM blinks.

2 Set the time.



- Press this mark (⏩) to advance and this mark (⏪) to reverse the time.
  (If the current time is not set correctly, the OFF/ON Dual Setting Timer cannot be set correctly.)

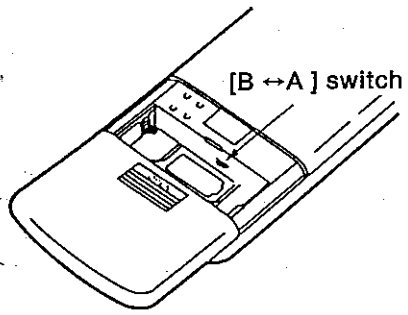
3 Press the Clock 時計 button.



- The letters of AM or PM lights up and the current time is set.
- Close the door.

Caution

- **The timer uses the current time as a reference.**
  If the time is not set correctly, correct timer setting will not be possible.
- **When the timer is set**
  The current time display will be vanished.
- **About the Remote Control [B ↔ A] switch**

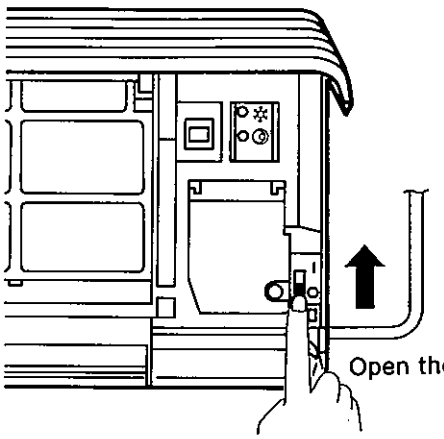


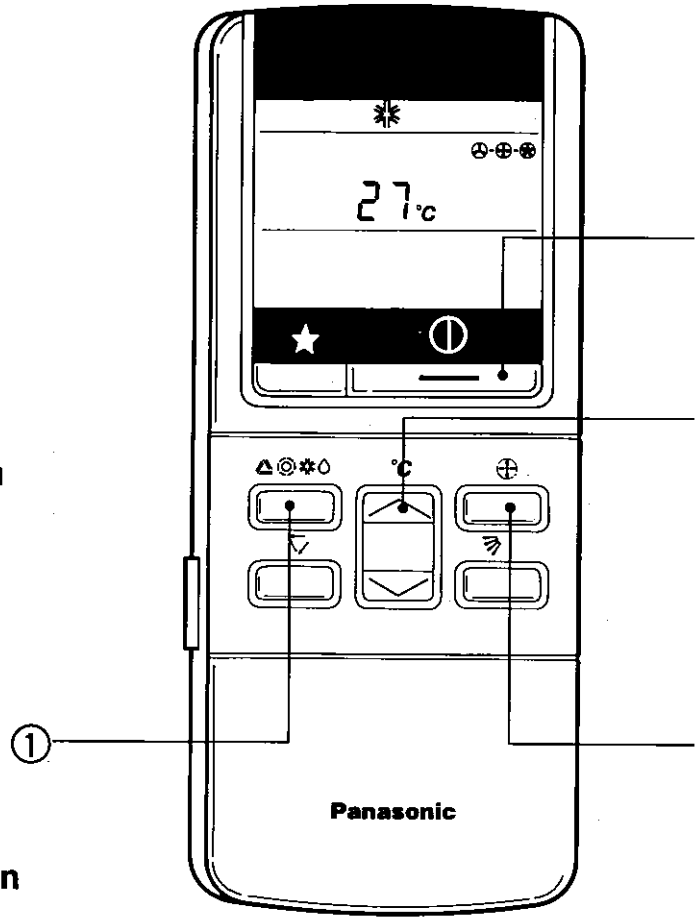
- This switch is used when two air conditioner units have been installed in one room.
- When two air conditioners with two remote controllers are used in one room, set one unit and remote controller to "A" and the other unit and remote controller to "B" to avoid mis-transmission of signals.
- If two air conditioners have been installed in one room, please consult with your dealer.

Air Conditioner Operation

(1) Operation Procedure

Indoor Unit





Set the Power Switch to "I" (ON)

① Operation Mode Selection Button

② Room Temperature Setting Button

③ Indoor Fan Speed Selection Button

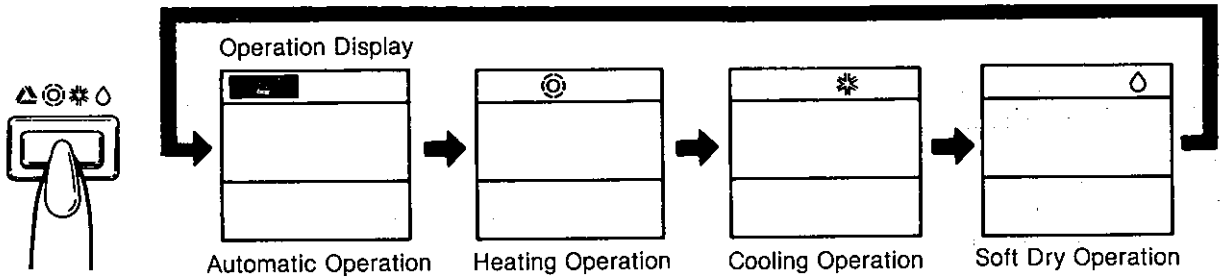
④ Off/On " ⏻ " Button

Combination of Air Conditioner Operation

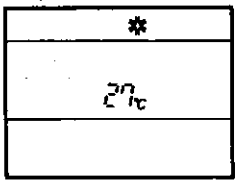
	Cooling Operation Mode (Page 36)	Heating Operation Mode (Page 37)	Soft Dry Operation Mode (Page 38)	Automatic Operation Mode (Page 39)
Airflow Direction Auto-Control (Page 41)	●	●	●	●
Timer or Sleep Mode (Page 42~44)	●	●	●	●

① Cooling Operation Mode

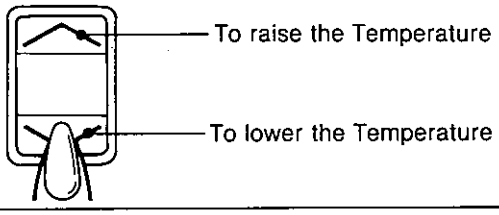
1 Select Cooling Operation.
Press the Operation Mode Selection Button.
Each time the button is pressed, the operation mode is shifted in the arrow direction.



2 Set the temperature.

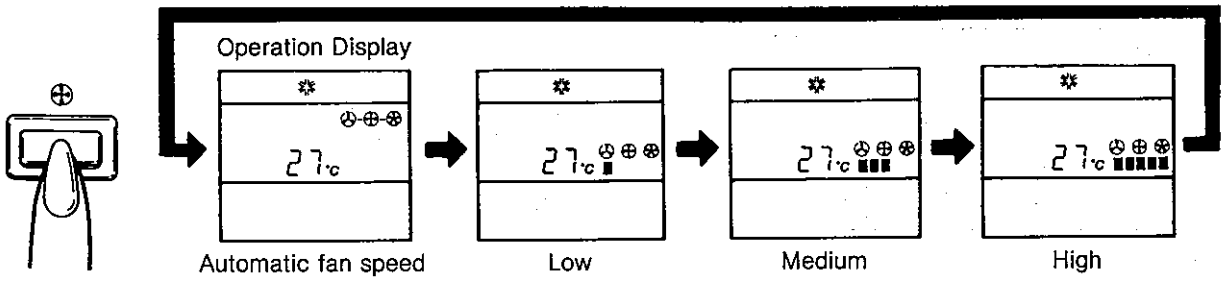


- The temperature can be set within a range of 16 to 30°C by 1°C each step.
- Usually 26°C~28°C is a recommended setting temperature.

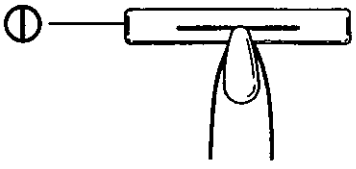


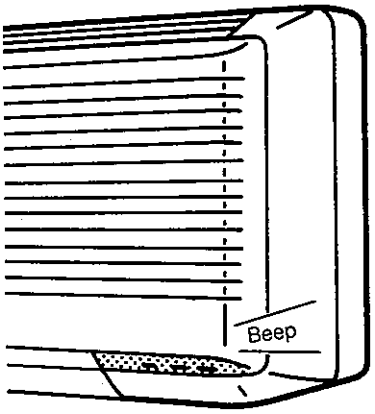
3 Set the fan speed.

- Fan speed can be selected in four steps, Auto, High, Midium or LOW.
- For Auto Fan Speed Mode, the speed of the indoor fan is adjusted automatically to "High" if the compressor is in operation, and to "Medium" speed if the compressor is stopped.



4 Press the Off/On " ⏻ " Button.

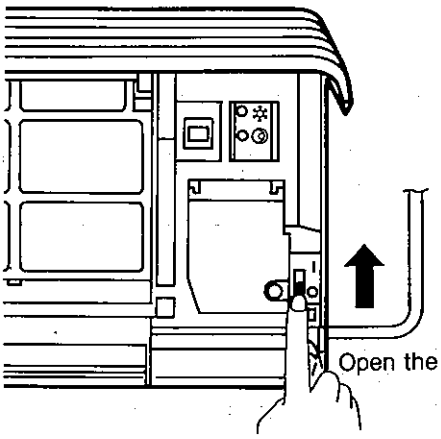




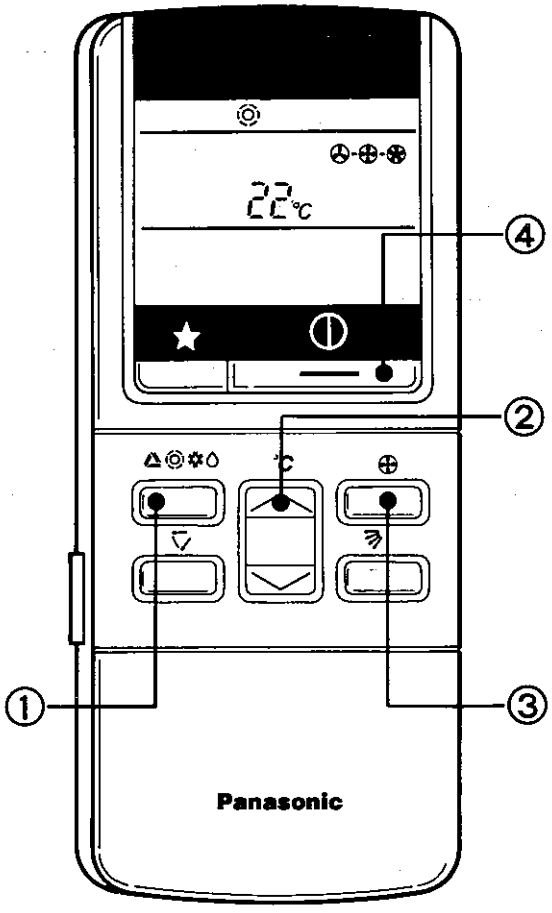
② Heating Operation Mode

Operation Procedure

Indoor Unit

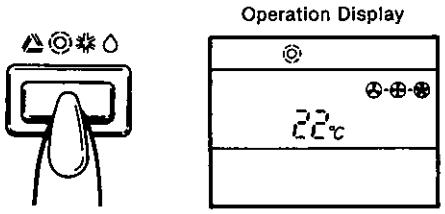


Remote control



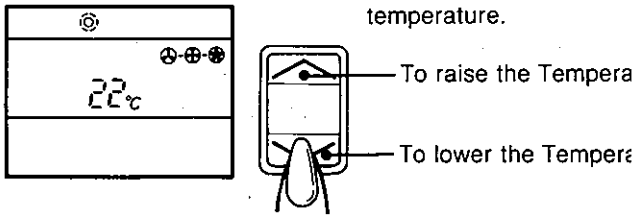
Set the Power Switch to "I" (ON)

1 Select Heating Operation.
Press the Operation Mode Selection Button.



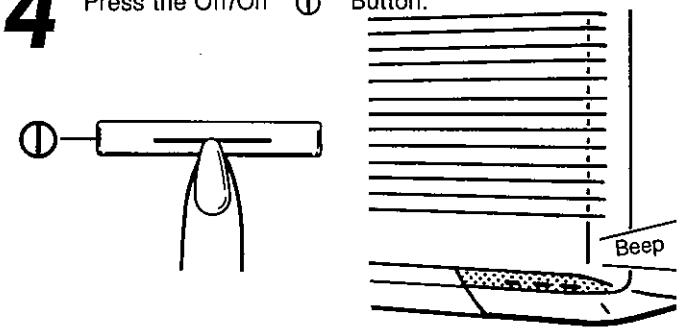
2 Set the temperature.

- Usually 20~24°C is a recommended setting temperature.



3
- The fan speed can be selected in 3 steps High, Mediu Low in manual operation mode.
- The fan speed is automatically changed to Medium or depend on discharge temperature when automatic fa speed is selected.

4 Press the Off/On " ⏻ " Button.

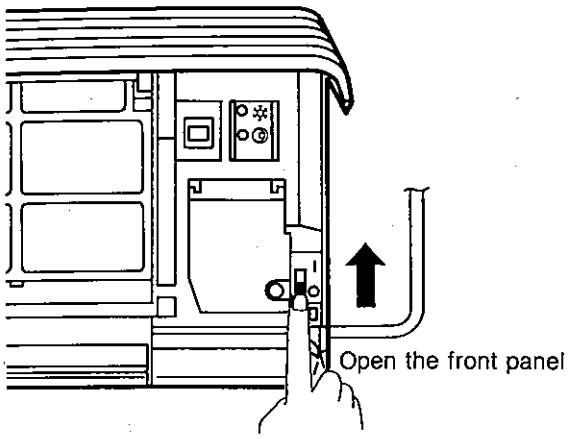


③ Soft Dry Operation Mode

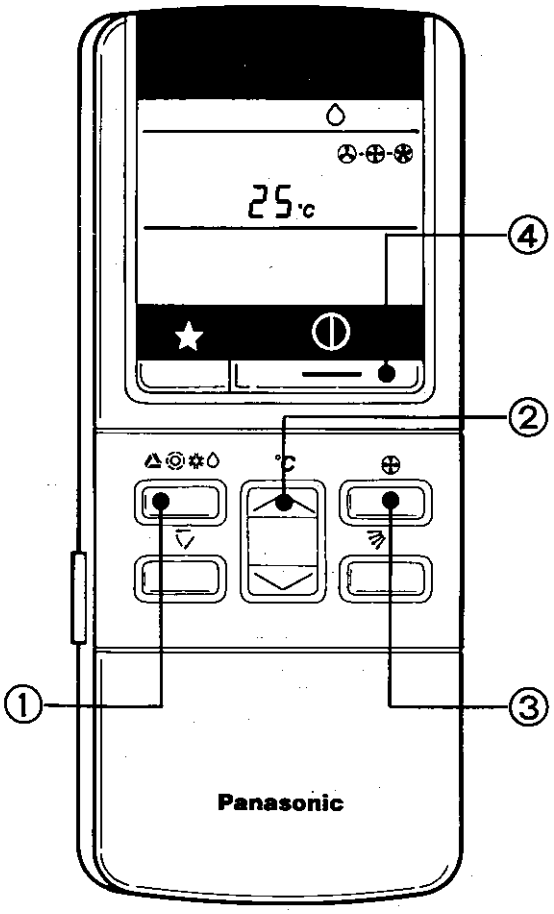
This mode dehumidifies without overcooling.

Operation Procedure

Indoor Unit

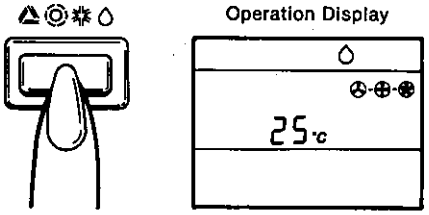


Remote control

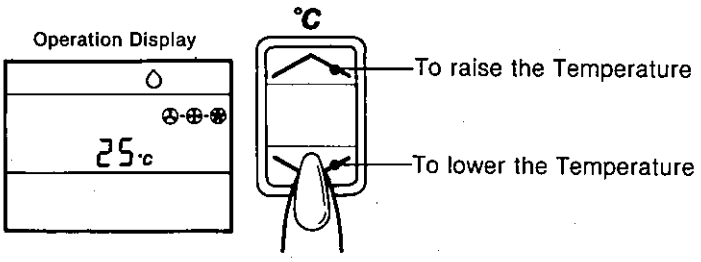


Set the Power Switch to "I" (ON)

1 Select Soft Dry Operation.
Press the Operation Mode Selection Button.

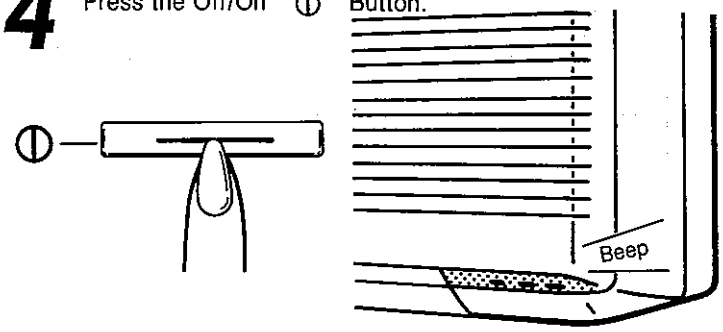


2 Set the temperature.



3 The fan speed is automatically set to Super Low.

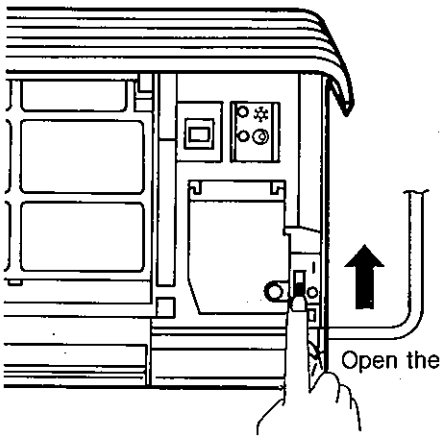
4 Press the Off/On " ⏻ " Button.



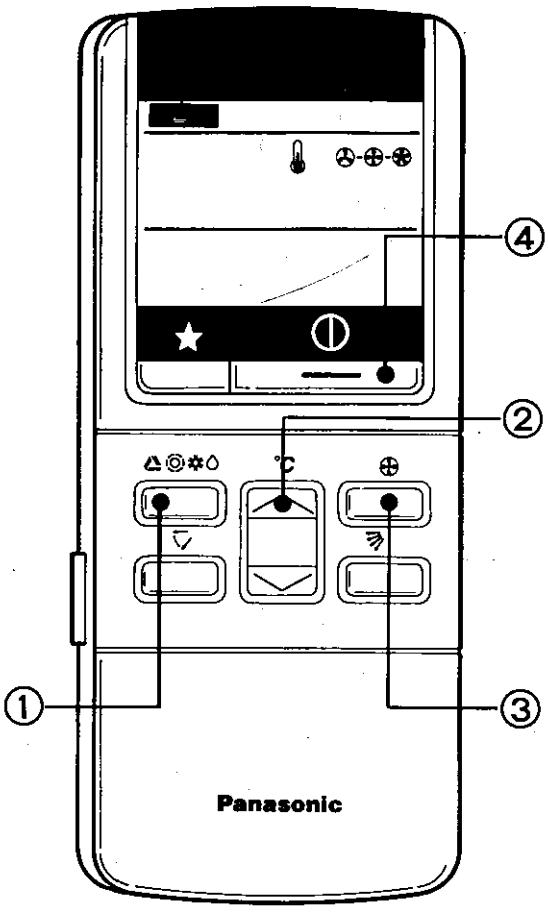
④ Automatic Operation Mode

Operation Procedure

Indoor Unit

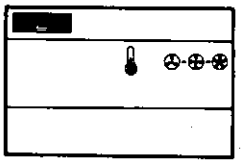


Remote control



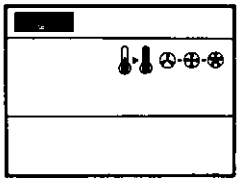
Set the Power Switch to "I" (ON)

1 Select Automatic Operation.
Press the Operation Mode Selection Button.



2 Set the temperature.

Operation Display



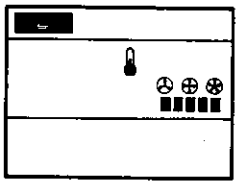
- Depending on your pers preference, clothing, etc set temperature can be s 2°C higher or lower than the standard if desired.

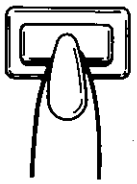
To raise the Temperature
To lower the Temperature

3 Set fan speed.

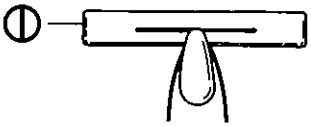
- Select the fan speed in t steps, Low through High
- The display here shows fan speed to "High".

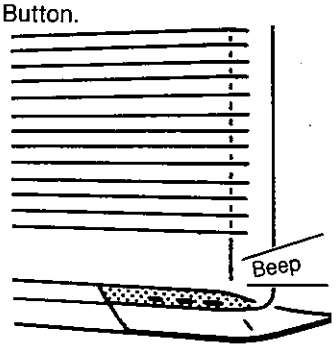
Operation Display





4 Press the Off/On " ⏻ " Button.



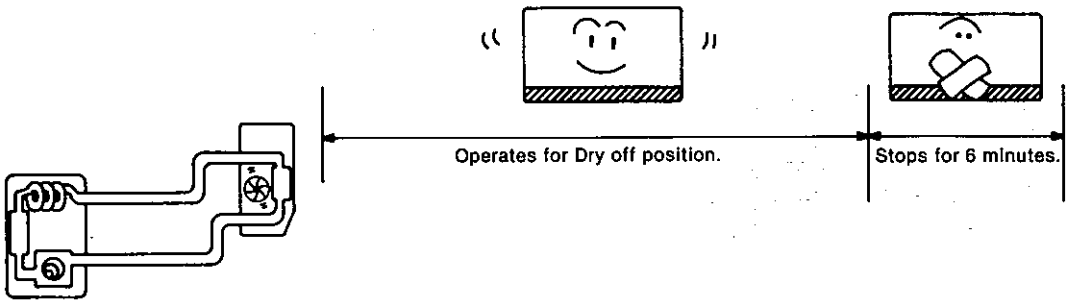


(For automatic operation, the operation lamp will first b for 20 seconds and then remain lit.)

(2) Operation Details

① Soft Dry Operation Mode

- Soft Dry Operation Mode is a gentle cooling operation that does not lower the room temperature so much.
- The operation will be standard cooling until the temperature of the room reaches the temperature set on the remote control, and then operation will switch to Soft Dry.
- During Soft Dry operation, the fan speed automatically changes to super low, and the operation will be dry off position and stop for six minutes.



② Automatic Operation Mode

- At the start of operation, the air conditioner will sense the temperature of the room and automatically select either Cooling, Soft Dry or Heating.
  (The operation lamp will blink for 20 seconds.)
- Once the type of operation is set, it will not change.
- Set the fan Speed as desired.
- The setting temperature can be set to "Standard", 2°C "Higher" or "Lower" than the standard if desired.
  (Press the Room Temperature Setting Button as desired.)

Room Temperature	Type of Operation	Setting Temperature		
		Higher	Standard	Lower
23°C and above	Cooling	27°C	25°C	23°C
20°C~below 23°C	Soft Dry	24°C	22°C	20°C
Below 20°C	Heating	23°C	21°C	19°C

③ Heating

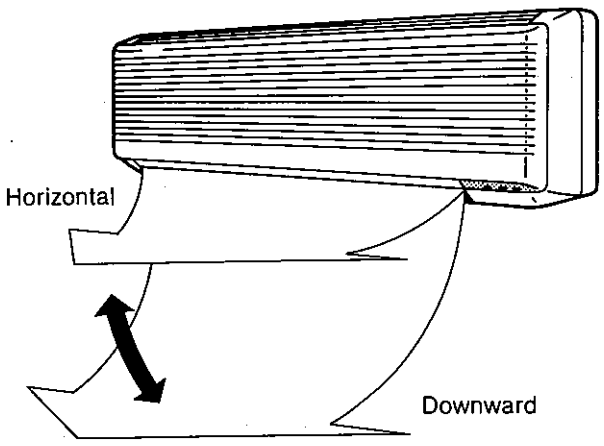
Hot Start Operation: Airflow begins after the temperature becomes warm to avoid undesired cooling effect.
Defrosting Operation: Depend on the outdoor temperature, the operation occasionally stops to thaw the frost on the outdoor unit.

(3) Airflow Direction Procedure

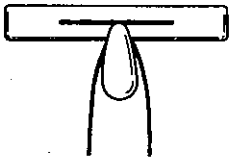
1 Vertical Airflow Direction Control

① Airflow Direction Manual Control

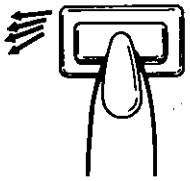
The airflow direction can be adjusted as desired by using the remote control.
This is effective when you want to cool yourself directly, such as when coming out of the bath.
The louvers can be adjusted within a range between the horizontal and 30 degrees downward at Cooling and Soft Dry Operation, and between the horizontal and 62 degrees downward at Heating Operation.



Press Off/On " ⏻ " Button.
(Confirm the unit on operation)



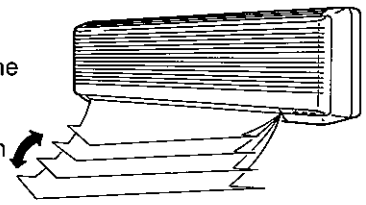
5 Press the Airflow Direction Manual Control Button, and release at the desired airflow direction.



② Airflow Direction Auto-Control

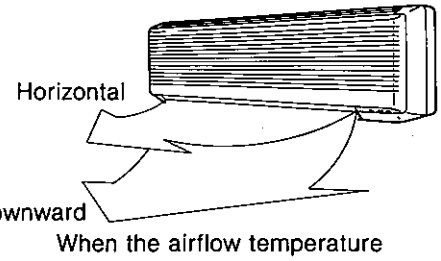
Cooling and Soft Dry Operation

The louvers will automatically swing up and down to create the feeling of refreshing breeze.



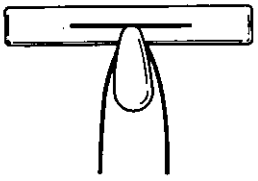
Heating Operation

When the airflow temperature is low

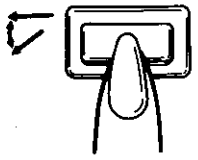


When the airflow temperature becomes warm

Press Off/On " ⏻ " Button.
(Confirm the unit on operation)



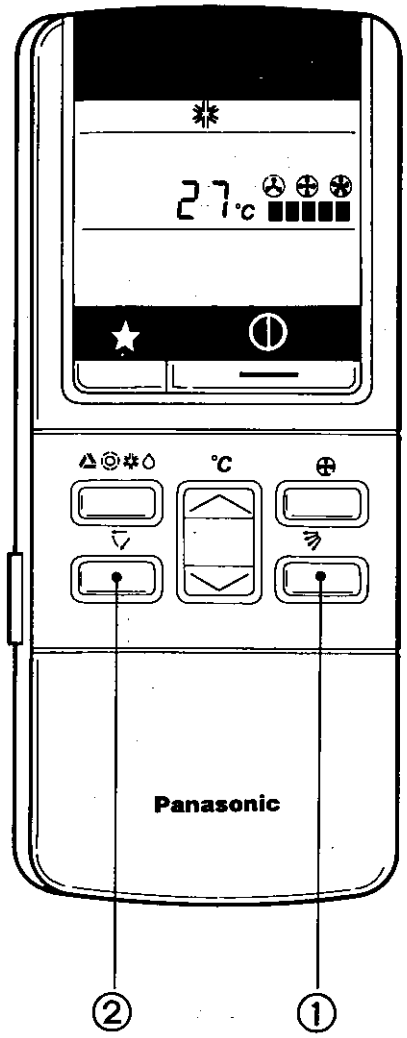
5 Press the Airflow Direction Auto-Control Button.



automatic airflow direction

To switch to manual airflow direction settin
press "Manual" button simply.

Remote Control



① Airflow Direction Manual Control Button

② Airflow Direction Auto-Control Button

Note

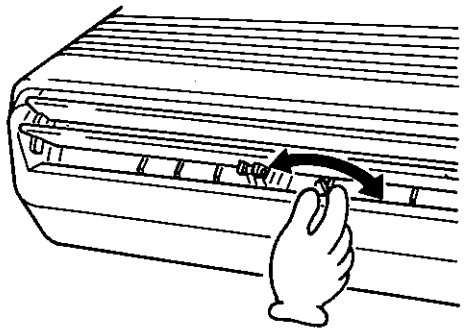
- Once the power switch has been set to "○" (OFF) the air conditioner will be set to automatic airflow direction operation when it is set back to "I" (ON).

Caution

- Always use the remote control to adjust the airflow direction. Manually moving the vertical airflow direction louver by hand could cause operation errors. If this occurs, set the power switch to "○" (OFF) and then back to "I" (ON) so that the louver returns to the correct position.
- When air conditioner operation is stopped, the vertical airflow direction louver will close the air conditioner's air outlet vent.
- During Cooling and Soft Dry operation, do not direct the vertical airflow louvers downward for hours.
  If operation continues in this way, condensation may form on the louvers and the air outlet vent, which may cause dripping.

2 Horizontal Airflow Direction Control

- Manually adjust the horizontal airflow direction louver to your desired airflow direction.



(4) Timer Setting

Once the timer is set, the same timer operation is automatically operating from the next day.

To cancel the schedule

(Example)
Cancel ON-TIMER

1 Press ON-TIMER button (⏲▸I).

2 Press Cancellation button (C).

(Timer lamp goes out.)

To change the schedule time

(Example)
Change ON-TIMER from 6:20 PM to 7 : 20 PM.

1 Press ON-TIMER button (⏲▸I).

2 Set to 7 : 20 PM.

3 Press SET button (SET).

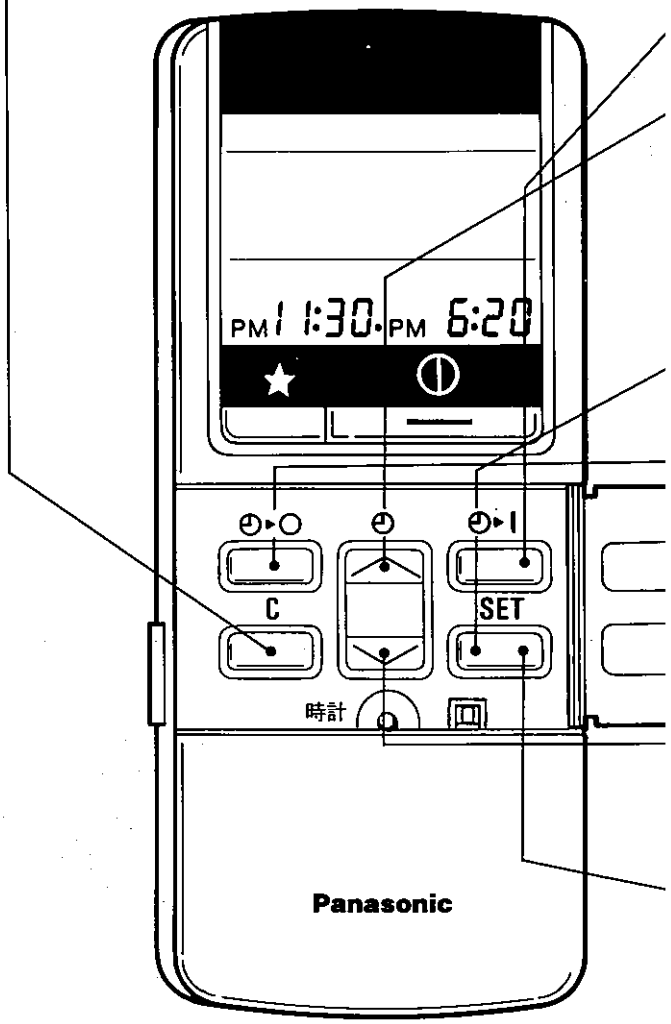
If the schedule is cancelled by a power failure

(Example)
Electrical power fail when the OFF-TIMER is set for 11 : 30 PM.

1 Press OFF-TIMER button (⏲▸O).

2 Press SET button (SET).

〈NOTE〉
The operation will start 15 or 30 minutes before the actual time set with [ON-TIMER] setting. This to allow time to attain your desired set temperature.
Cooling and Soft Dry: 15 minutes before
Heating : 30 minutes before



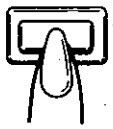
Timer setting procedure

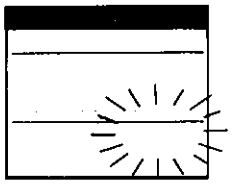
(Example) To begin operation at 6 : 20 PM and stop at 11 : 30 PM.

When using the ON-TIMER only: Steps 1-3. (when you reach home)

When using the OFF-TIMER only: Steps 4-6. (when you sleep)

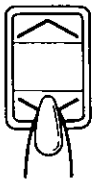
1 Press ON-TIMER button.

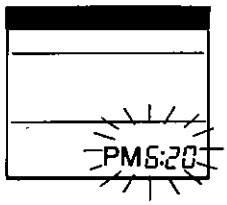




- ON-TIMER lamp blinks.

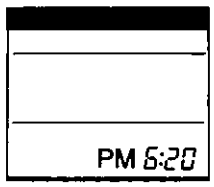
2 Set the hour and minute.
Set to 6 : 20 PM.





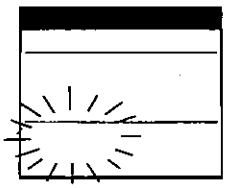
- Press button (⏩) to advance the timer and button (⏪) to reverse the Timer.

3 Press SET button.



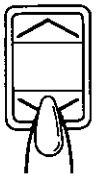
- Timer lamp lights up.

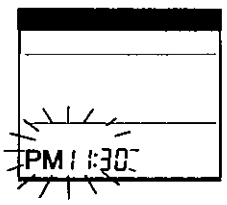
4 Press OFF-TIMER button.



- OFF-TIMER lamp blinks.

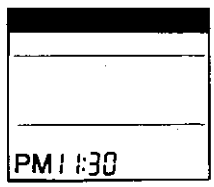
5 Set the hour and minute.
Set to 11 : 30 PM.





- Press button (⏩) to advance the time and button (⏪) to reverse the Timer.

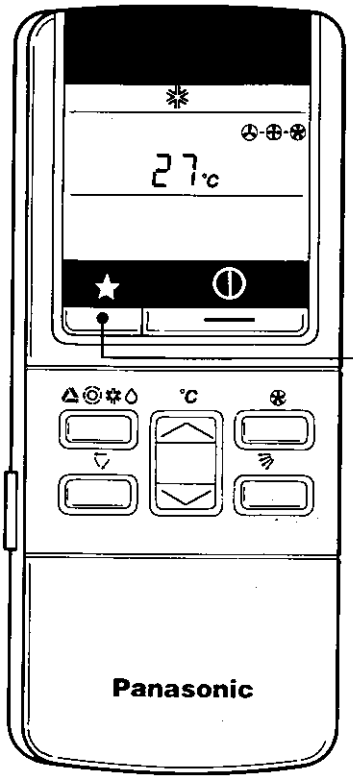
6 Press SET button.



- Timer lamp lights up.

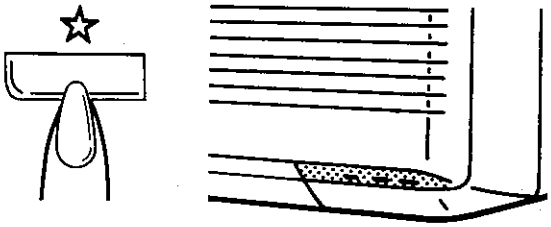
(5) Sleep Mode Auto Control Setting

Sleep Mode operates to match your sleeping condition.



Remote Control

Press the Sleep Mode Auto Operation Button.



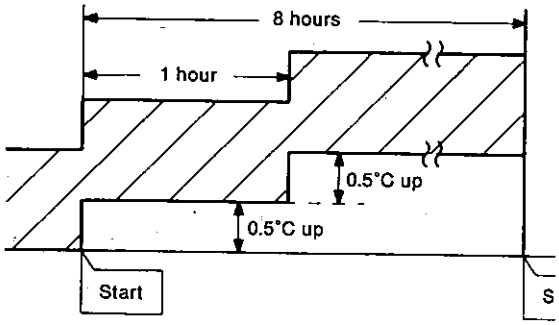
- The Sleep Mode Auto LED of the room air conditio will light up.

Details of Sleep Mode

①Cooling or Soft Dry operation

When you press the SLEEP Mode (☆), the following movement will start to avoid overcooling.

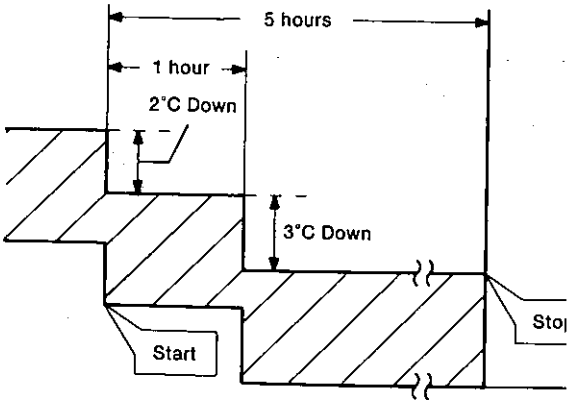
- The fan speed is automatically set to Low.
- The setting temperature will be raised by 0.5°C at the start of operation and by 0.5°C one hour later.
- The operation will stop after 8 hours.



②Heating operation

When you press the SLEEP Mode (☆) the following movement will start to avoid overheating.

- The fan speed is automatically set to Low or Super Low.
- The setting temperature will be dropped by 2°C at the start of operation and by 3°C one hour later.
- The operation will stop after 5 hours.

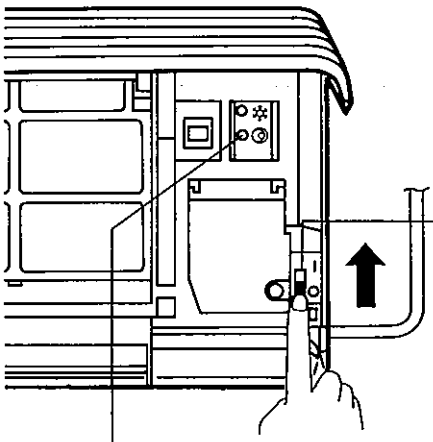


Forced Operation

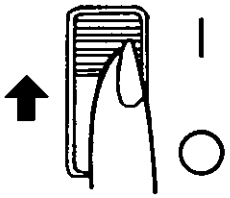
When the remote control can't be used.

"Operation procedures"

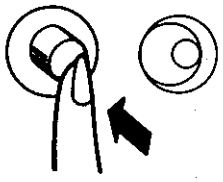
Forced operation is automatic operation, the vertical airflow direction setting will be automatic.



1 Set the Power Switch to "I" (ON)



2 Press the Forced Operation Button.



(The operation indication lamp will blink for 20 seconds, and then light up.)

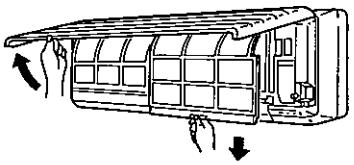
- If the button is pressed once more, the air conditioner will stop.

(The operation indication lamp will switch off.)

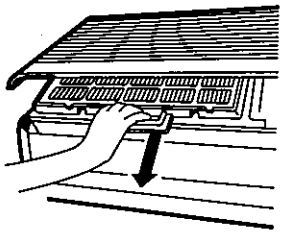
Care and Maintenance

Replacement of Air Purifying Filters (Recommended once every three months)

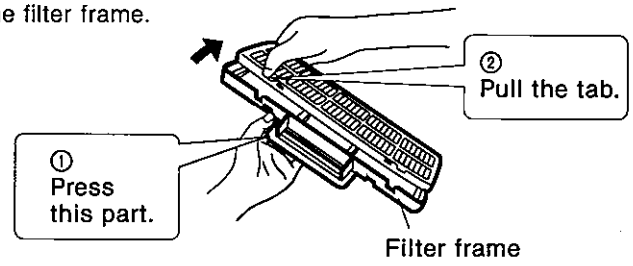
1 Remove the Air Filters.



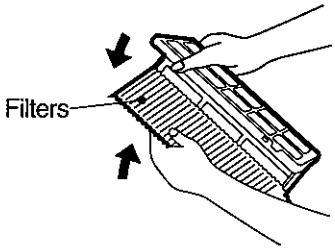
Remove the Air Purifying Filters.



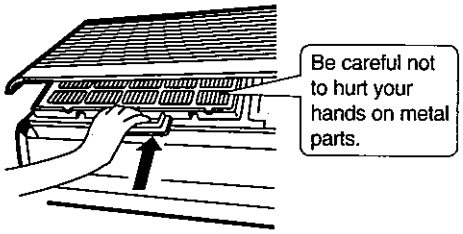
2 Remove the filter from the filter frame.



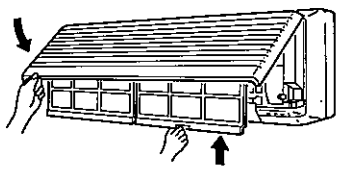
3 Insert new filters.



4 Re-insert the Air Purifying Filters (One each at right and left).

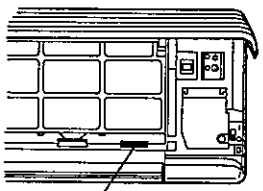


Re-insert the Air Filters.



Caution

- If Air Purifying Filters turn the same colour as the sample colour attached to the indoor unit within a three month period, replace the filters.
- Dusty filters cannot be re-used, even if they are cleaned and washed.
- Re-insert the filters correctly at the left and right, with the side marked [FRONT] facing forward. (The left and right indications are shown on the filters.)
- Purchase replacement filters from your air conditioner dealer.
- Part number for Air Purifying Filters: CZ-SF1N



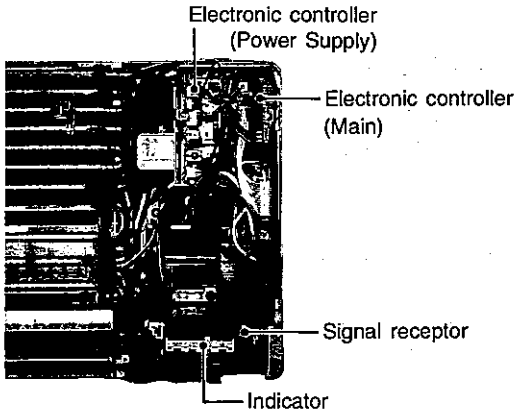
Information

- When the air purifying filters are installed, the air flow amount decreases, resulting in a slight los of air conditioning performance.

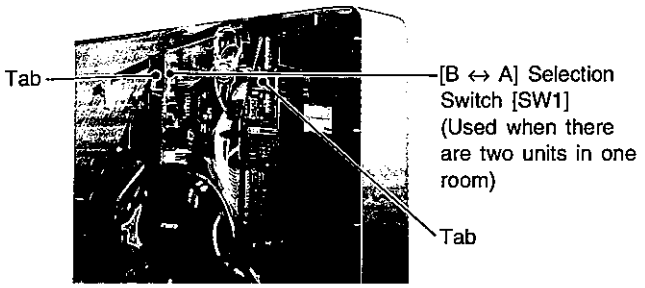
Disassembly of the Parts

- **Inspection points for the Indoor Electronic Controller**

1. The Electronic Controllers, a Signal Receptor and an Indicator can be seen by removing the Front Grille, as shown in the figure at right.

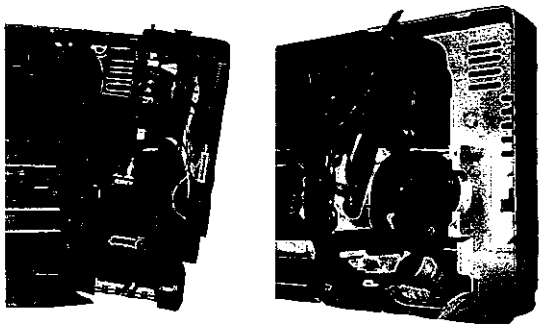


2. The Electronic Controllers can be pulled forward (towards you) by taking off the tabs which clamp the Electronic Controllers.



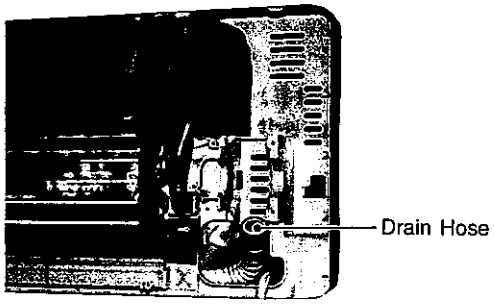
- **Removal procedure for the Indoor Fan Motor**

1. Remove the connector (CN-MTR) of Fan Motor and the connector (CN-TH1) of the sensor from the Electronic Controller.



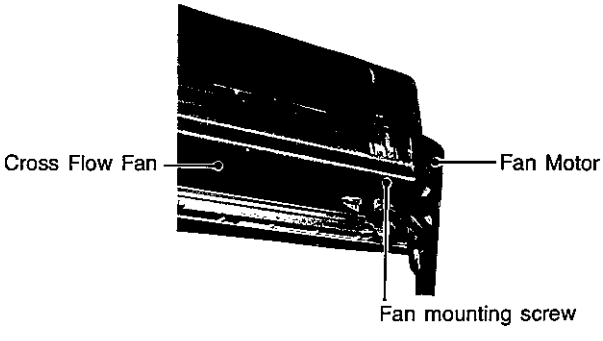
2. Remove the Control Box
   As shown in the figure at right, this can be done by removing the 4 screws and release the tab at the top of Control box. Pull the Control box forward slightly and remove the connector at the terminal of Air Swing Motor.

   Note: Removal of Discharge Grille before removing the control box is recommended to avoid damaging other parts.



3. Remove the Air Discharge Grille.
   (Removal of Drain Hose is necessary before remove the Air Discharge Grille.)
   Remove the Air Discharge Grille by taking off the 3 Screws that hold the Air Discharge Grille and then pull the Discharge Grille in a down and forward direction.

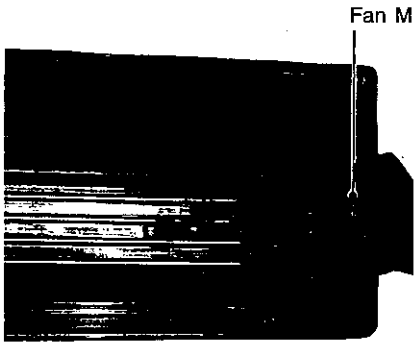
4. Remove the Fan Motor.
   Loosen the Fan securing Screw at the junction with the Cross Flow Fan.
   (Pull off the Bearing at the Left of the Cross Flow Fan and remove the Fan Motor.)

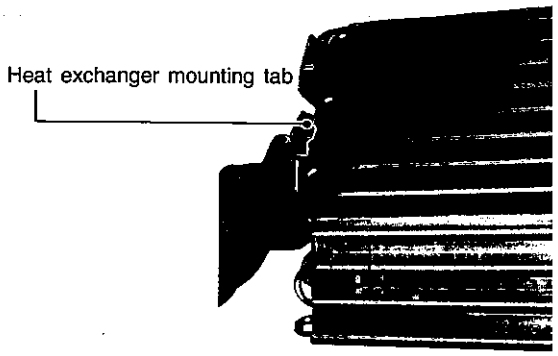


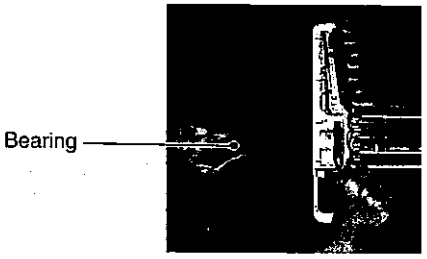
- **Removal procedure for the Cross Flow Fan**

1. Remove the Fan securing Screw and Bearing (Refer to the removal procedure of the Indoor Fan Motor).

2. Take off the mounting tab at the left of the Heat Exchanger, and as shown in the figure at right, pull the Heat Exchanger forward (left side) and remove the Cross Flow Fan.

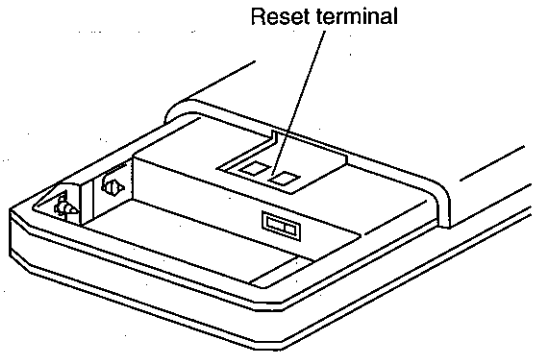






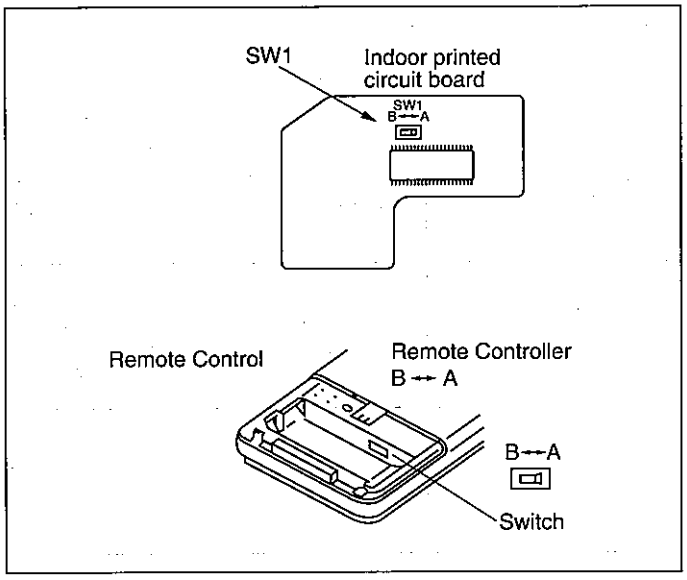
- **Remote Control Reset**

When the batteries are inserted for the first time, or the batteries are replaced, all the indications will blink and the remote control might not work.
If this happens, remove the back lid of the remote control and you will find a resetting terminal, and by shorting it with a minus screwdriver, it will return to normal.



- **Changing the wireless remote control transmission code**

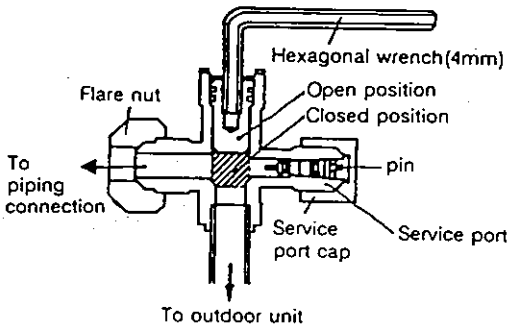
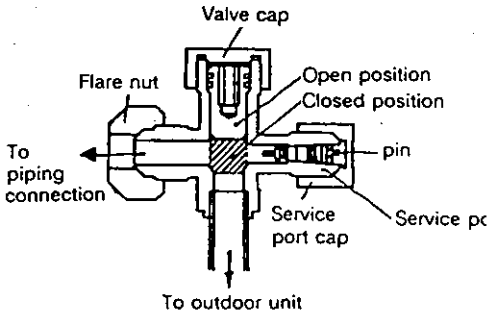
When two indoor units are installed in the same room, in order to prevent operating errors caused by using two remote controls, set up the remote control [B ↔ A] switch (SW1).
The unit is set to A when it is shipped.



- **By adding a jumper wire to the remote control side and a carbon resistor (1/4W, 10kΩ) to the indoor printed circuit board, it is possible to select from 4 types of transmission codes including the condition at time of delivery condition (1).**

	Remote control		Indoor printed circuit board		Note
	Switch SW B ↔ A	J – B	Switch SW1	RX	
1	A	———	A	———	At product delivery
2	B	———	B	———	
3	A	Jumper wire	A	10kΩ	
4	B	Jumper wire	B	10kΩ	

3-way Valve

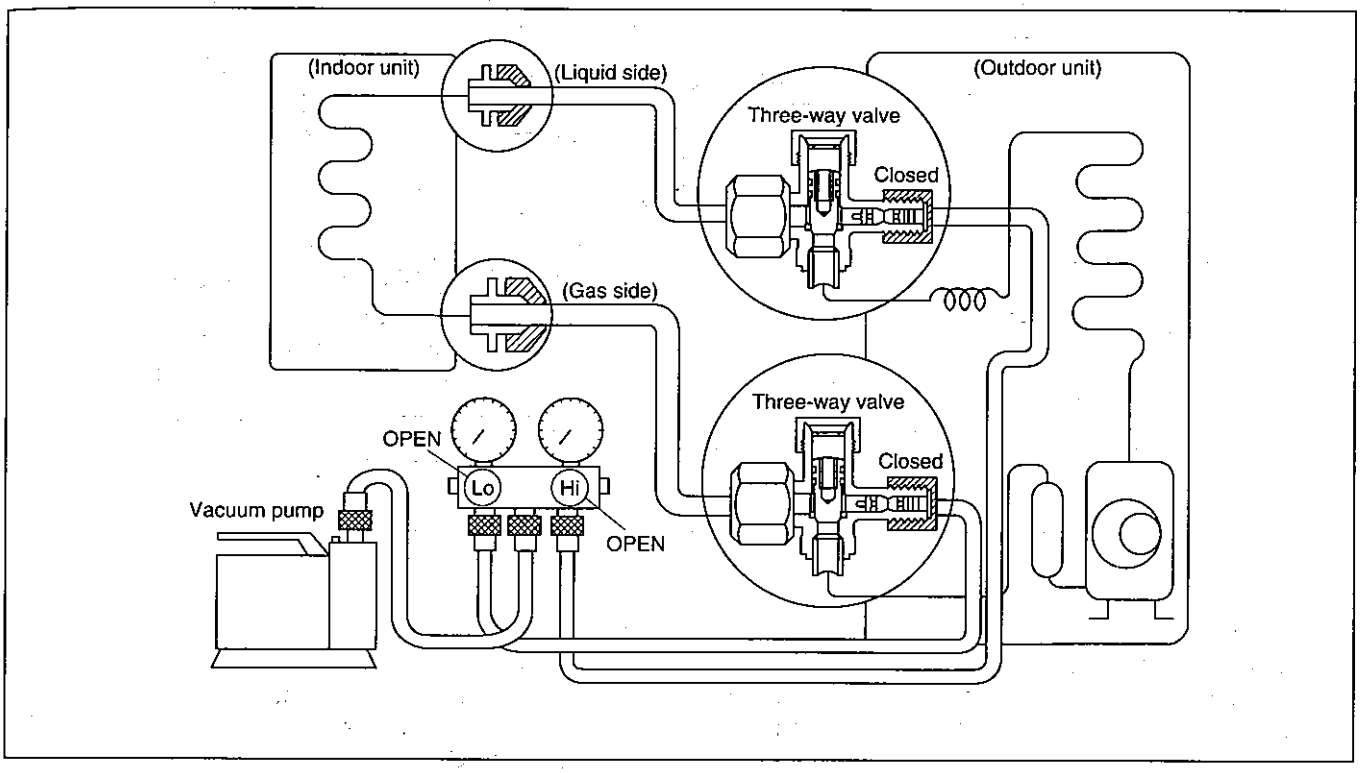
	3-way Valve (Liquid Side)		3-way Valve (Gas Side)	
				
Works	Shaft Position	Service Port	Shaft Position	Service Point
Shipping	Closed (With valve cap)	Closed (With cap)	Closed (With valve cap)	Closed (With cap)
Evacuation (Installation and Re-Installation)	Closed (Clockwise)	Open (Connected manifold gauge)	Closed (Clockwise)	Open (Connected manifold gauge)
Operation	Open (With valve cap)	Closed (With cap)	Open (With valve cap)	Closed (With cap)
Pumping down (Transferring)	Closed (Clockwise)	Closed (With cap)	Open (Counter-clockwise)	Open (Connected manifold gauge)
Evacuation (Servicing)	Open (Counter-clockwise)	Open (Connected manifold gauge)	Open (Counter-clockwise)	Open (Connected manifold gauge)
Gas charging (Servicing)	Open (Counter-clockwise)	Open (Connected manifold gauge)	Open (Counter-clockwise)	Open (Connected manifold gauge)
Pressure check (Servicing)	Open (Counter-clockwise)	Open (Connected manifold gauge)	Open (Counter-clockwise)	Open (Connected manifold gauge)
Gas releasing (Servicing)	Open (Counter-clockwise)	Open (Connected manifold gauge)	Open (Counter-clockwise)	Open (Connected manifold gauge)

1 Evacuation of Installation

When installing an air conditioner, be sure to evacuate the air inside the indoor unit and pipes in the following procedure.

Required tool: hexagon wrench, adjustable wrench, torque wrenches, wrench to hold the joints, gas leak detector, charging set and vacuum-pump.

The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.



Procedure

Service port cap
Be sure, using a torque wrench to tighten the service port cap (after using the service port), so that it prevents the gas leakage from the refrigeration cycle.

(1) Connect a charging hose with a push pin to the Low and High sides of a charging set and the service ports of the 3-way valves.
- Be sure to connect the end of the charging hose with the push pin to the service port.

(2) Connect the center hose of the charging set to a vacuum pump.

(3) Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0MPa (0cmHg) to −0.1MPa (−76cmHg). Then evacuate the air for approximately ten minutes.

(4) Close the valve of both the Low and High sides of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.
BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.

(5) Disconnect the charging hose from the vacuum pump and from the service ports of both of the 3-way valve.

(6) Tighten the service port caps of both of the 3-way valves at a torque of 18N·m with a torque wrench.

(7) Remove the valve caps of both of the 3-way valves. Position both of the valves to "open" using a hexagonal wrench (4mm).

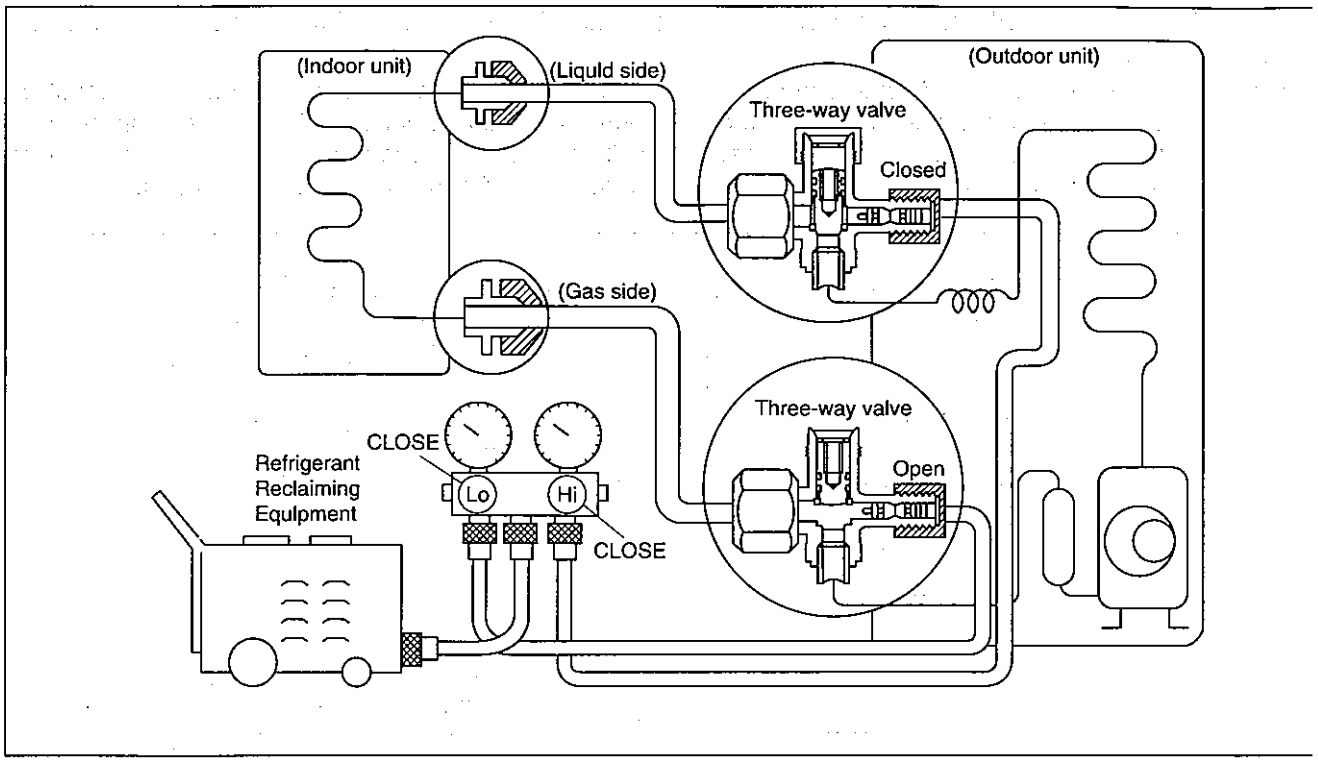
(8) Mount valve caps onto both of the 3-way valves.
- Be sure to check for gas leakage.

Caution

If gauge needle does not move from 0MPa (0cmHg) to −0.1MPa (−76cmHg) in step (3) above take the following measures:

If the leaks stop when the piping connections are tightened further, continue working from step (3).
If the leaks do not stop when the connections are retightened, repair the location of the leak.

2 Pumping down



Procedure

(1) Confirm that both the 3-way valves are set to the opened position.
- Remove the valve stem caps and confirm that the valve stems are in the opened position.
- Be sure to use a hexagonal wrench to operate the valve stems.

(2) Operate the unit for 10 to 15 minutes.

(3) Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.
- Connect the charge hose with the push pin to the Gas side service port.

(4) Air purging of the charge hose.
- Open the low-pressure valve on the charge set slightly to air purge from the charge hose.

(5) Set the Liquid side 3-way valves of units A, B and C to the closed position.

(6) Operate the air conditioner at the cooling cycle one room by using either A, B or C and stop it when the gauge indicates 0 MPa (0 kg/cm²G).

If the unit can not be operated at the cooling (weather is rather cool), press the Pumping Down button in the Indoor unit. So that the unit can be operated.

(7) Immediately set the gas side 3-way valve the closed position.
- Do this quickly so that the gauge ends indicating 0.1 MPa (1 kg/cm²G) to 0.3 (3 kg/cm²G).

(8) Use refrigerant reclaiming equipment collect refrigerant from indoor unit pipes.

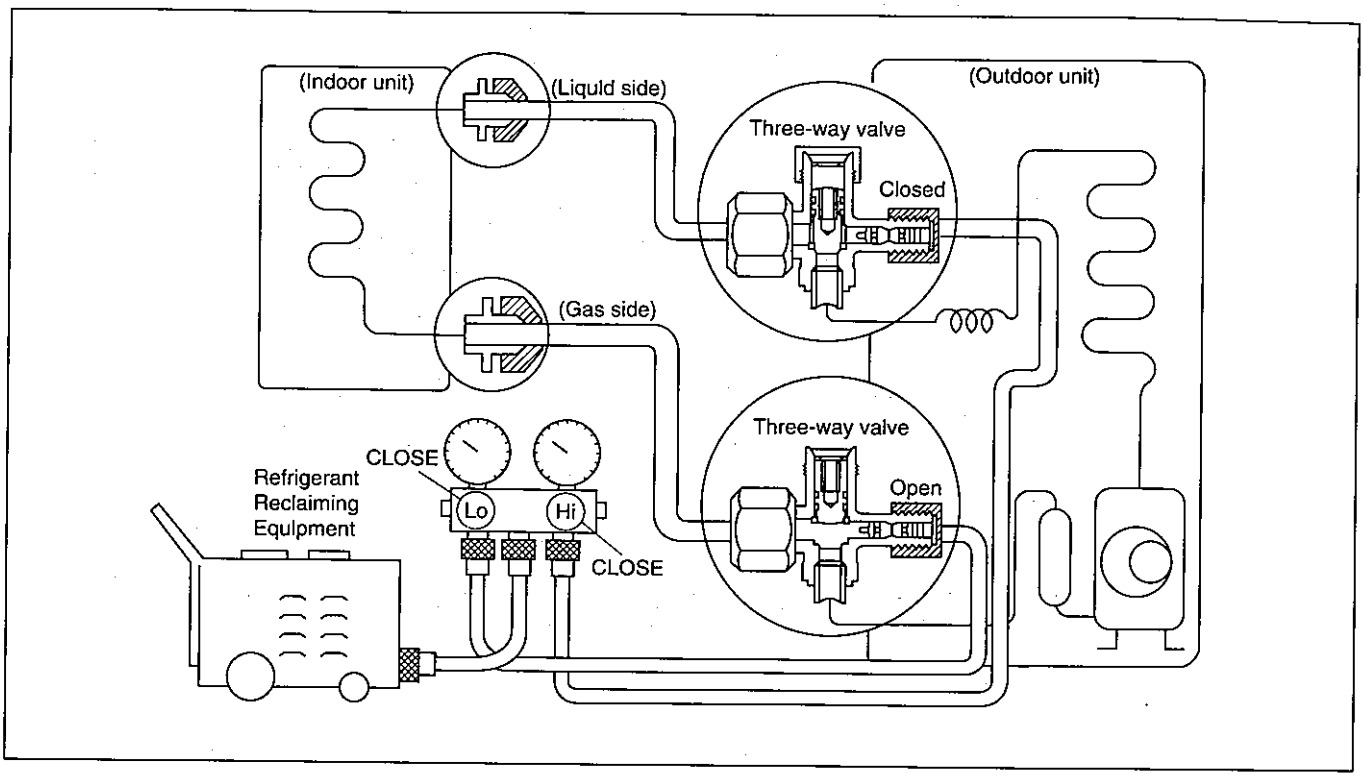
(9) Disconnect the charge set, and mount both 3-way valve's stem caps and the serv port caps.
- Use torque wrench to tighten the service caps to a torque of 18 N•m.
- Be sure to check for gas leakage.

(10) Disconnect pipes from indoor unit and door unit.

3 Evacuation of Re-installation

WHEN RE-INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.

If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.



Procedure

(1) Connect a charging hose with a push pin to the Low and High sides of a charging set and the service port of a 3-way valves.
- Be sure to connect the end of the charging hose with the push pin to the service port.

(2) Connect the center hose of the charging set to a vacuum pump.

(3) Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0MPa (0cmHg) to −0.1MPa (−76cmHg). Then evacuate the air for approximately ten minutes.

(4) Close the valve of both the Low side and High side of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.
BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.

(5) Disconnect the charging hose from the vacuum pump.

(6) Charge the pipes and indoor unit with gas refrigerant from liquid (High) side 3-way valve service port and then discharge the refrigerant until gas (Low) side gauge needle indicates 0.3MPa (3kg/cm²).
- **BE SURE TO USE REFRIGERANT RECLAIMING EQUIPMENT WHILE DISCHARGING THE REFRIGERANT.**
- **Purge the air from charge set's center hose.**
- **Be sure to check for gas leakage.**

Caution

If gauge needle does not move from 0MPa (0cmHg) to −0.1MPa (−76cmHg) in step (3) above, take the following measures:

If the leaks stop when the piping connections are tightened further, continue working from step (3).
If the leaks do not stop when the connections are retightened, repair the location of the leak.

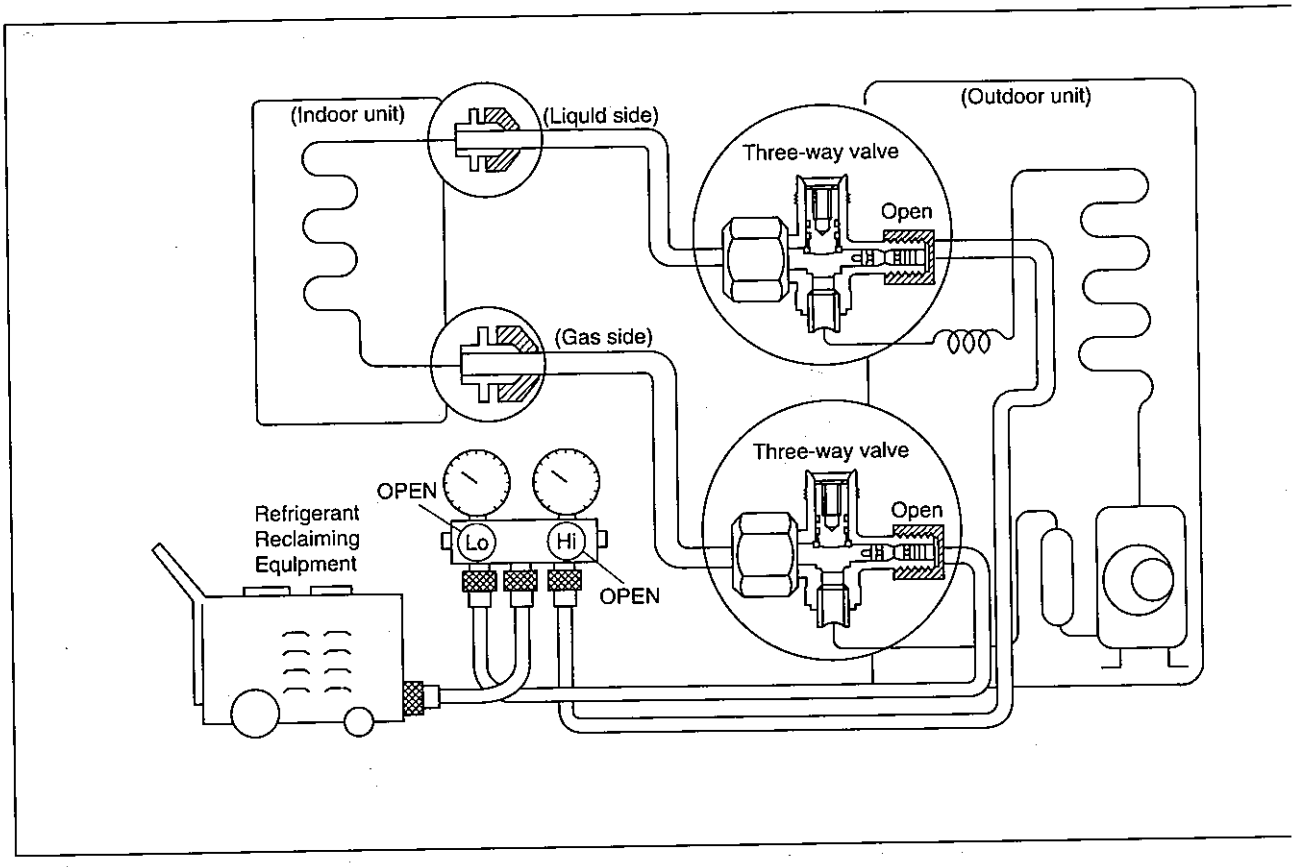
(7) Tighten the service port caps of both of the 3-way valves at a torque of 18N•m with a torque wrench.

(8) Remove the valve caps of the both of the 3-way valves. Position both of the valves to "open" using a hexagonal wrench (4mm).

(9) Mount valve caps onto both of the 3-way valves.

4 Balance refrigerant of the 3-way valves

(Lack of refrigerant in the refrigeration cycle)



Procedure

(1) Confirm that both the 3-way valves are set to the opened position.

(2) Connect the charge set to the 3-way valve's service port.
- Leave the valve on the charge set closed.
- Connect the charge hose with the push-pin to the service port.
- Confirm whether the pressure indicates more than 0.1 MPa (1 kg/cm^{2}G).

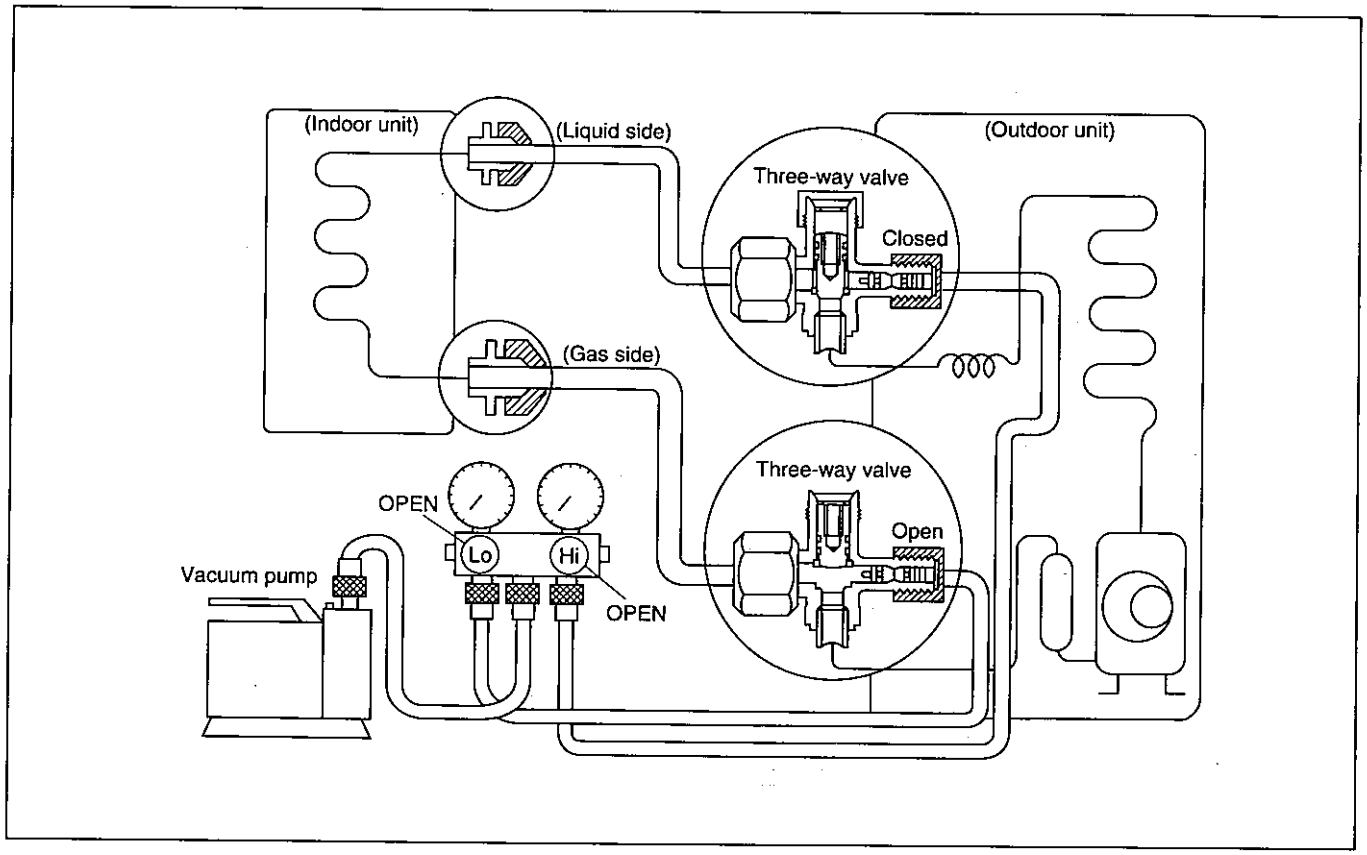
(3) Connect the charge set's center hose to refrigerant reclaiming equipment.

(4) Open the valve (Low side) on the charge set and loosen the hose connected with the Refri Reclaiming Equipment to purge the air from the hose.

(5) Turn on refrigerant reclaiming equipment to collect the refrigerant until the needle indicates refrigerant is remaining).

5 Evacuation

(No refrigerant in the refrigeration cycle)



Procedure

(1) Connect the vacuum pump to the charge set's center hose.

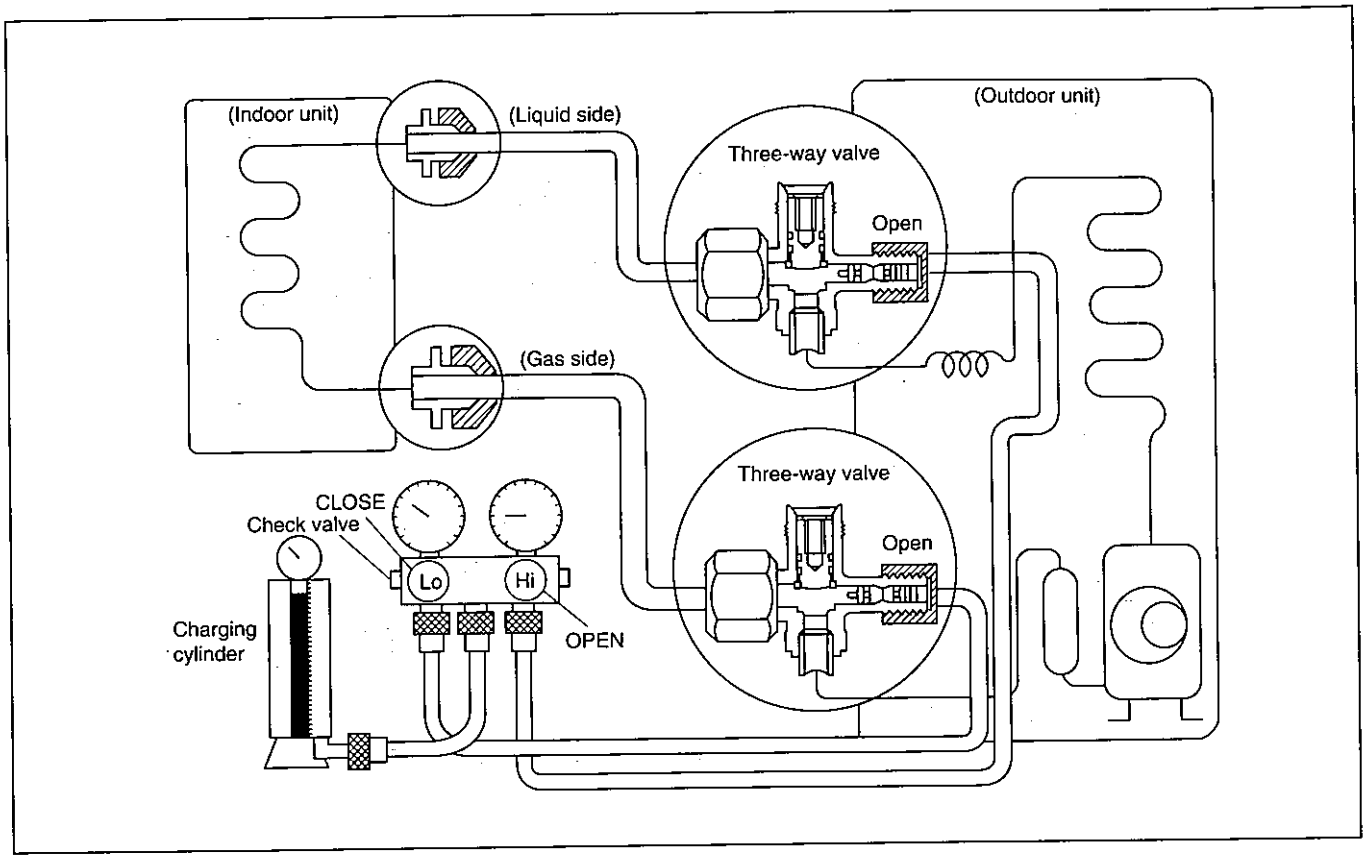
(2) Turn on the vacuum pump to evacuate the unit.
- Confirm that the gauge needle moves toward −0.1 MPa (−76 cmHg).
- Apply the vacuum for approximately one hour (vacuum of 4 mmHg or less).

(3) Close the valves (Low side and High side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately five minutes after the vacuum pump is turned off).

(4) Disconnect the charge hose from the vacuum pump.

6 Gas Charging

(After Evacuation)



Procedure

(1) Connect the charge hose to the charging cylinder.
- Connect the charge hose which you disconnect from the vacuum pump to the valve at the bottom of the cylinder.

(2) Purge the air from the charge hose.
- Open the valve at the bottom of the cylinder and use a screwdriver to press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).

(3) Open the High side valve on the charge set and charge the refrigerant to the unit.
- Be sure to open only the High side valve on the charge set to charge the system from the liquid-side (high-pressure) pipe. (If the system cannot be charged with the specified amount of refrigerant, start cooling operation after turning the SV Switch back to "AUTO" and then charge the specified amount gas, and then close the valve at the bottom of the charge cylinder.)

(4) Immediately disconnect the charge hoses from both 3-way valve service ports.

(5) Mount the valve caps and the service port caps onto the 3-way valves.
- Use torque wrench to tighten the service port caps to a torque of 18N•m.
- Be sure to check for gas leakage.

(6) Turn the SV Switch back to "AUTO" in the Outdoor unit.

TROUBLESHOOTING GUIDE

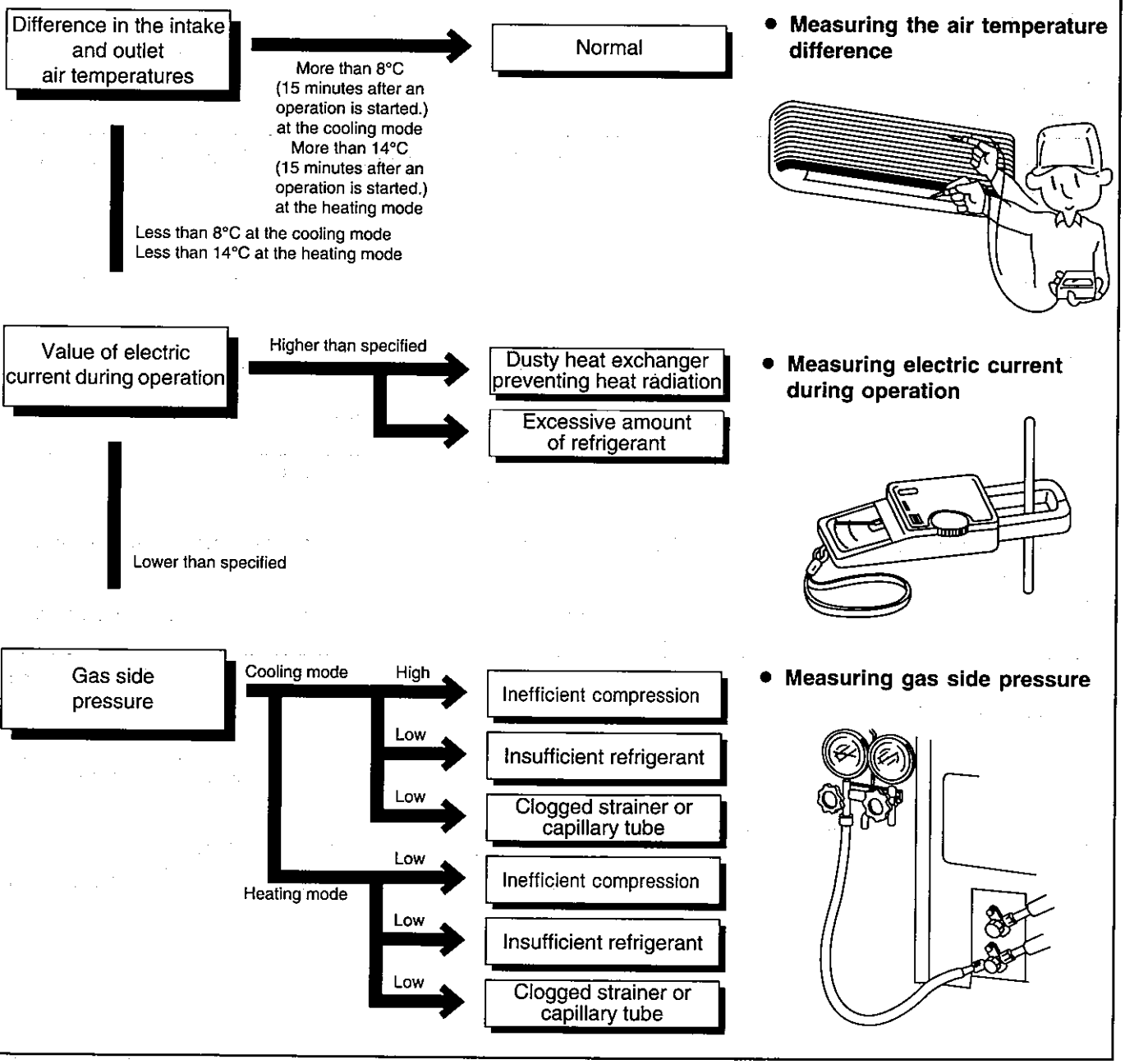
Refrigeration cycle system

In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.
The normal outlet air temperature and the pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table to the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas side pressure MPa (kg/cm²G)	Outlet air temperature (°C)
Cooling mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16
Heating mode	1.5 ~ 2.1 (15 ~ 21)	36 ~ 45

★ Condition: Indoor fan speed; High
Outdoor temperature 35°C at the cooling mode and 7°C at the heating mode


Difference in the intake and outlet air temperatures
More than 8°C (15 minutes after an operation is started.) at the cooling mode
More than 14°C (15 minutes after an operation is started.) at the heating mode
Normal
Less than 8°C at the cooling mode
Less than 14°C at the heating mode
• Measuring the air temperature difference
Value of electric current during operation
Higher than specified
Dusty heat exchanger preventing heat radiation
Excessive amount of refrigerant
Lower than specified
• Measuring electric current during operation
Gas side pressure
Cooling mode
High
Low
Low
Heating mode
Low
Low
Low
Inefficient compression
Insufficient refrigerant
Clogged strainer or capillary tube
Inefficient compression
Insufficient refrigerant
Clogged strainer or capillary tube
• Measuring gas side pressure

TROUBLESHOOTING GUIDE

1. Relationship among the condition of the air conditioner and pressure and electric current

Condition of the air conditioner	Cooling mode			Heating mode		
	Low pressure	High pressure	Electric current during operation	Low pressure	High pressure	Electric current during operation
Insufficient refrigerant (gas leakage)	↘	↘	↘	↘	↘	↘
Clogged capillary tube or Strainer	↘	↘	↘	↘	↘	↘
Short circuit in the indoor unit	↘	↘	↘	↗	↗	↗
Heat radiation deficiency of the outdoor unit	↗	↗	↗	↘	↘	↘
Inefficient compression	↗	↘	↘	↗	↘	↘

- Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

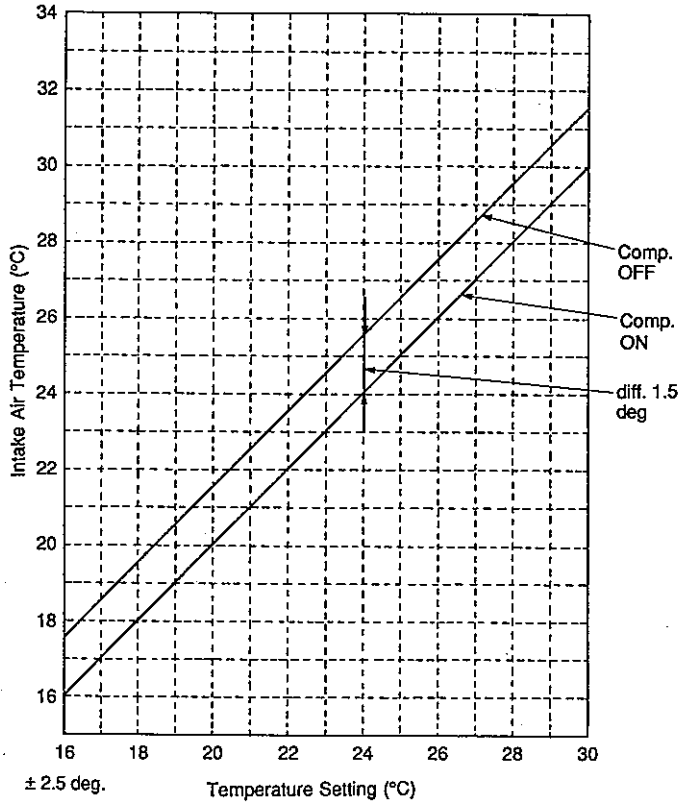
2. Diagnosis methods of a malfunction of a compressor and a 4-way valve

Nature of fault	Symptom
Insufficient compressing of a compressor	• Electric current during operation becomes approximately 80% lower than the normal value. • The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C) • The difference between high pressure and low pressure becomes almost zero.
Locked compressor	• Electric current raches a high level abnormally, and the value exceeds the limit of an ammeter. In some case, a breaker turns off. • The compressor is a humming sound.
Inefficient switches of the 4-way valve	• Electric current during operation becomse approximately 20% lower than the normal value. • The temperature difference between from the discharge tube to the 4-way valve and from suction tube to the 4-way valve becomes almost zero.

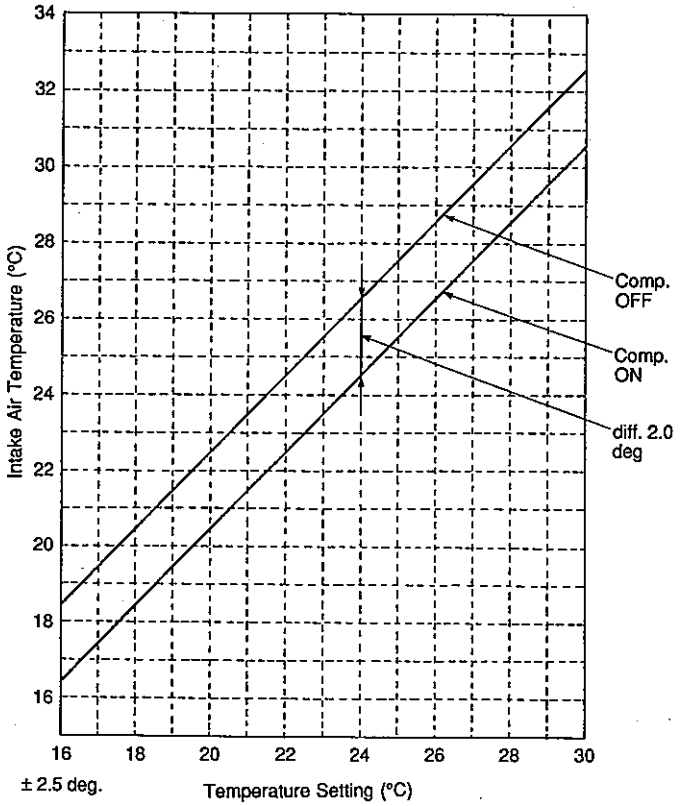
Technical Data

■ Thermostat characteristics CS-1873KE/CS-2473KE

● Cooling



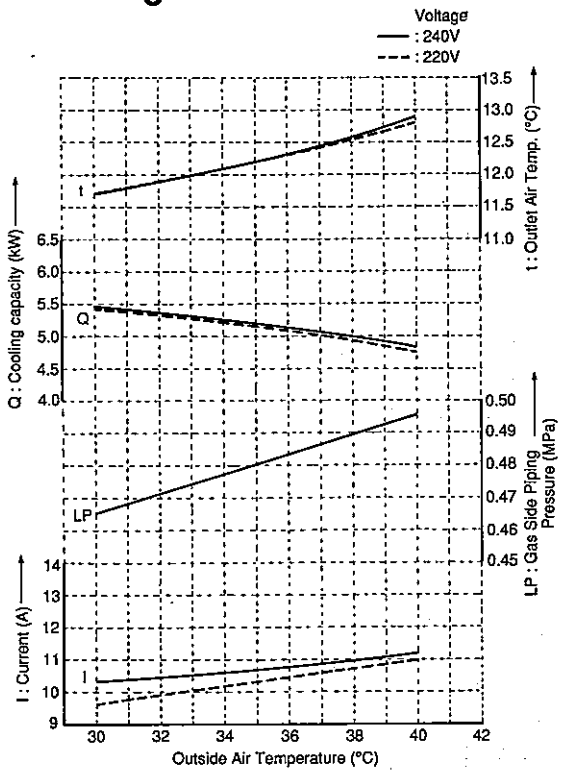
● Heating



Technical Data

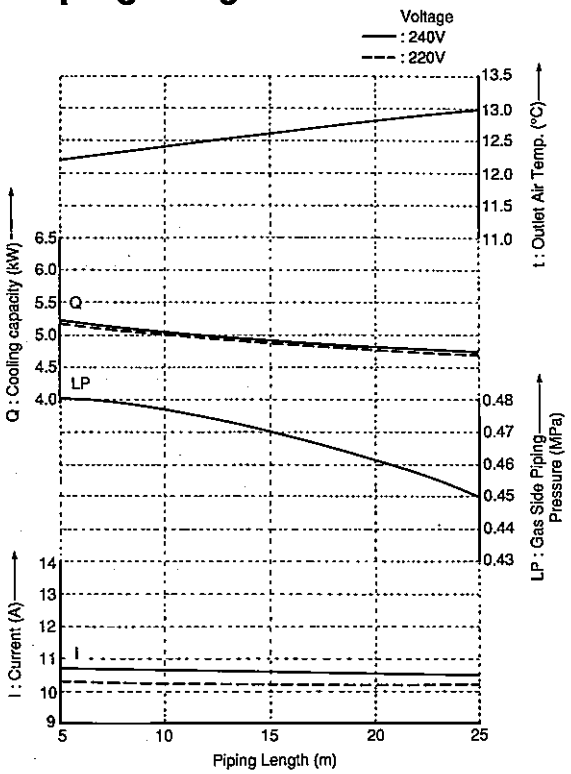
■ Operation characteristics CS-1873KE/CU-1873KE

● Cooling characteristics



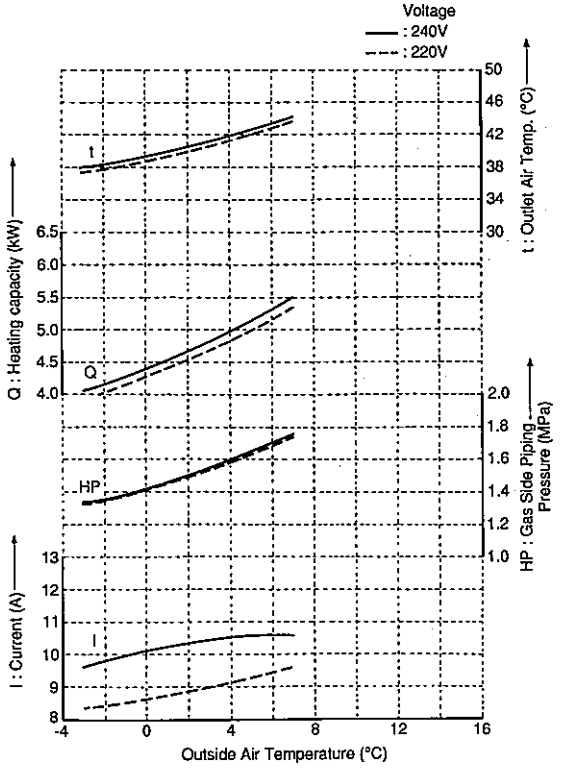
[Conditions] Room temperature: 27/19°C
Cooling operation: at High fan
Piping length: 5m

● Piping Length characteristics



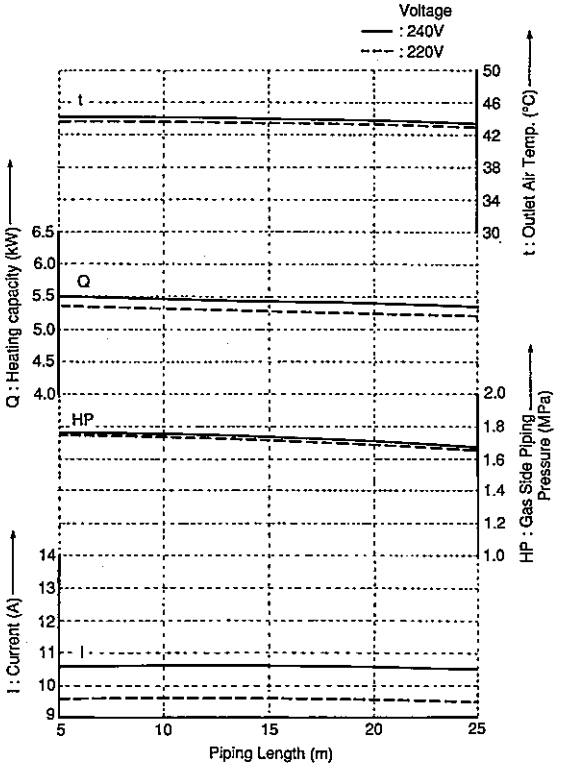
[Conditions] Room temperature: 27/19°C
Outside Air temperature: 35/24°C
Cooling operation: at High fan

● Heating characteristics



[Conditions] Room temperature: 20°C
Heating operation: at High fan
Piping length: 5m

● Piping Length characteristics

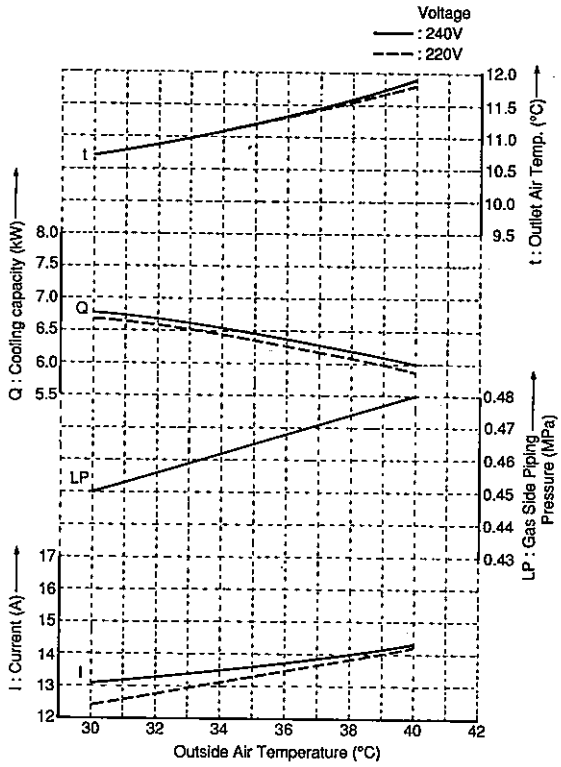


[Conditions] Room temperature: 20°C
Outside Air temperature: 7/6°C
Heating operation: at High fan

Technical Data

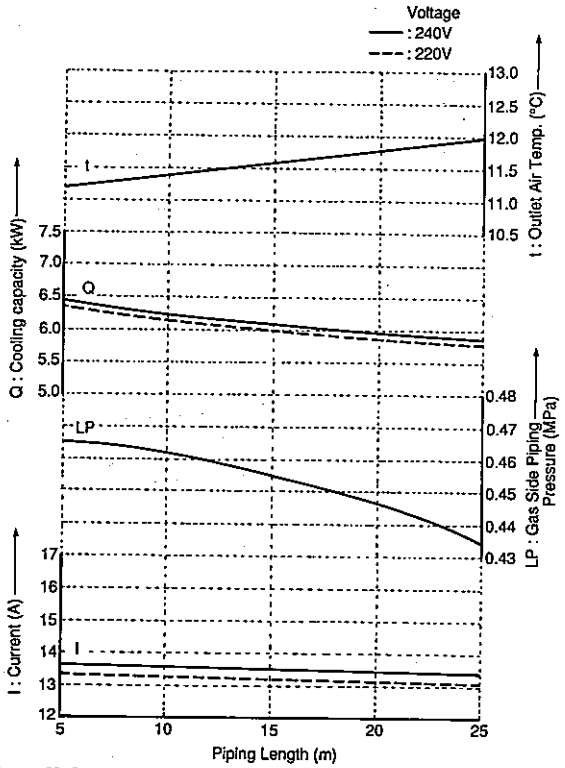
■ Operation characteristics CS-2473KE/CU-2473KE

● Cooling characteristics



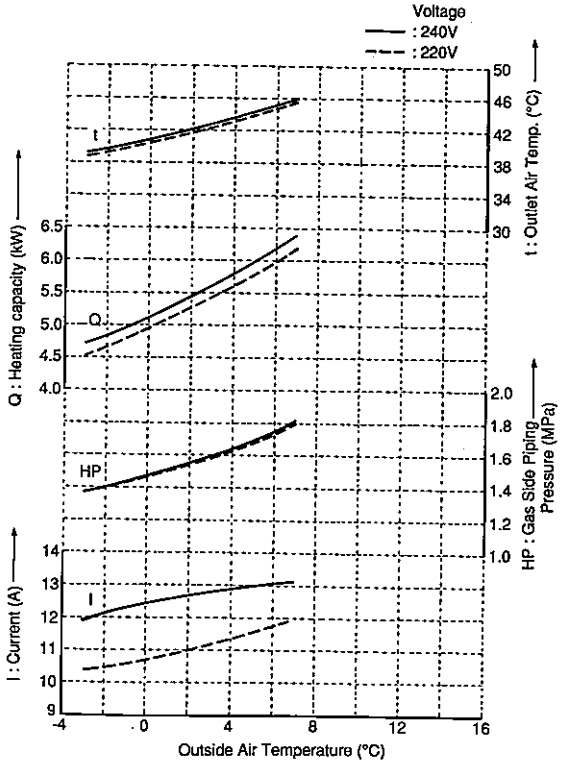
[Conditions] Room temperature: 27/19°C
Cooling operation: at High fan
Piping length: 5m

● Piping Length characteristics



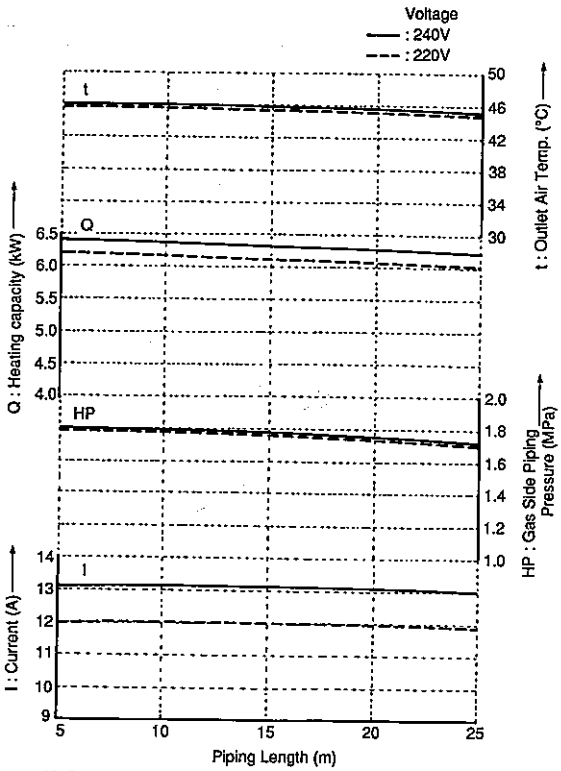
[Conditions] Room temperature: 27/19°C
Outside Air temperature: 35/24°C
Cooling operation: at High fan

● Heating characteristics



[Conditions] Room temperature: 20°C
Heating operation: at High fan
Piping length: 5m

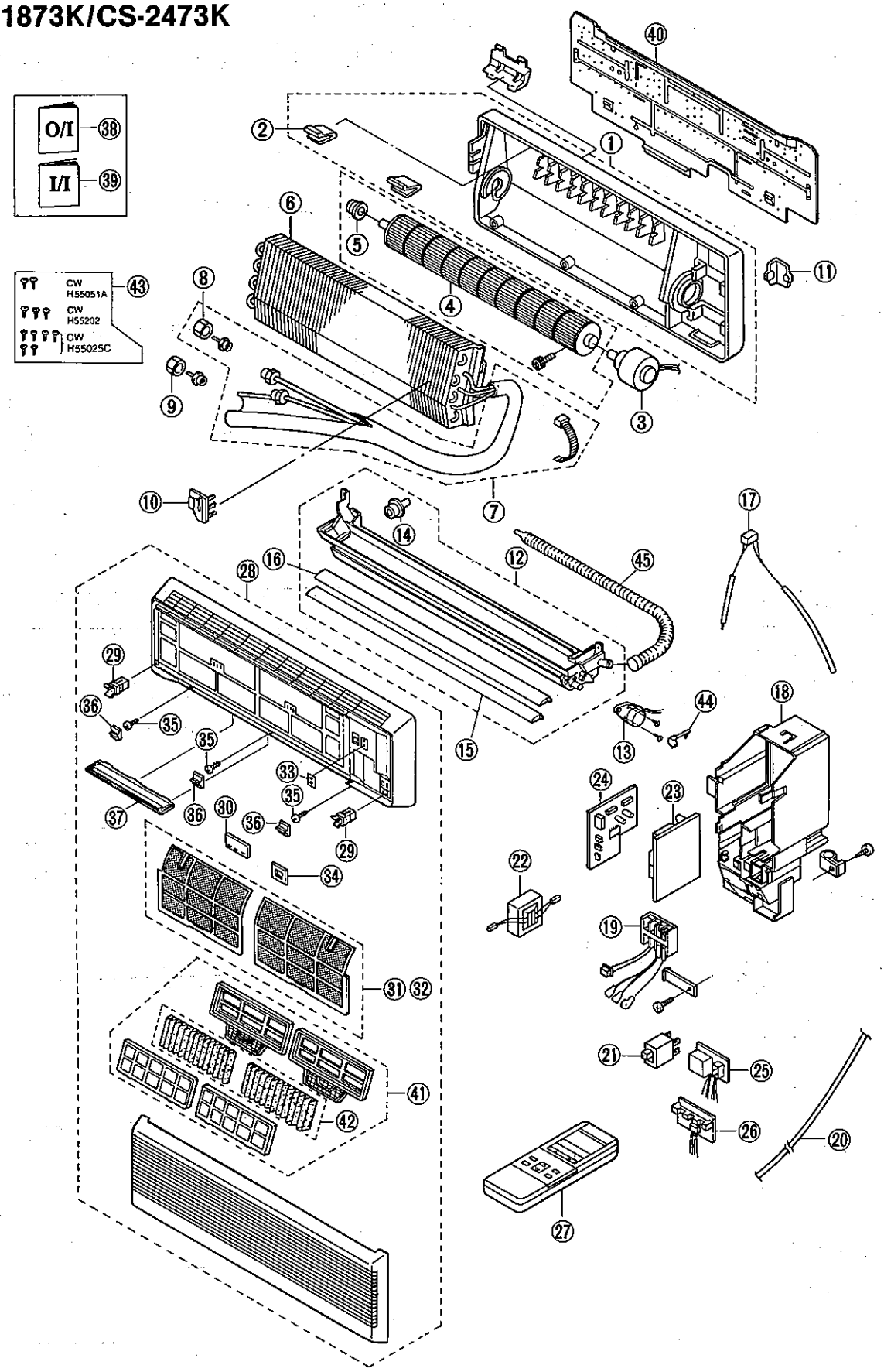
● Piping Length characteristics



[Conditions] Room temperature: 20°C
Outside Air temperature: 7/6°C
Heating operation: at High fan

Exploded View

●CS-1873K/CS-2473K



(Note) The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

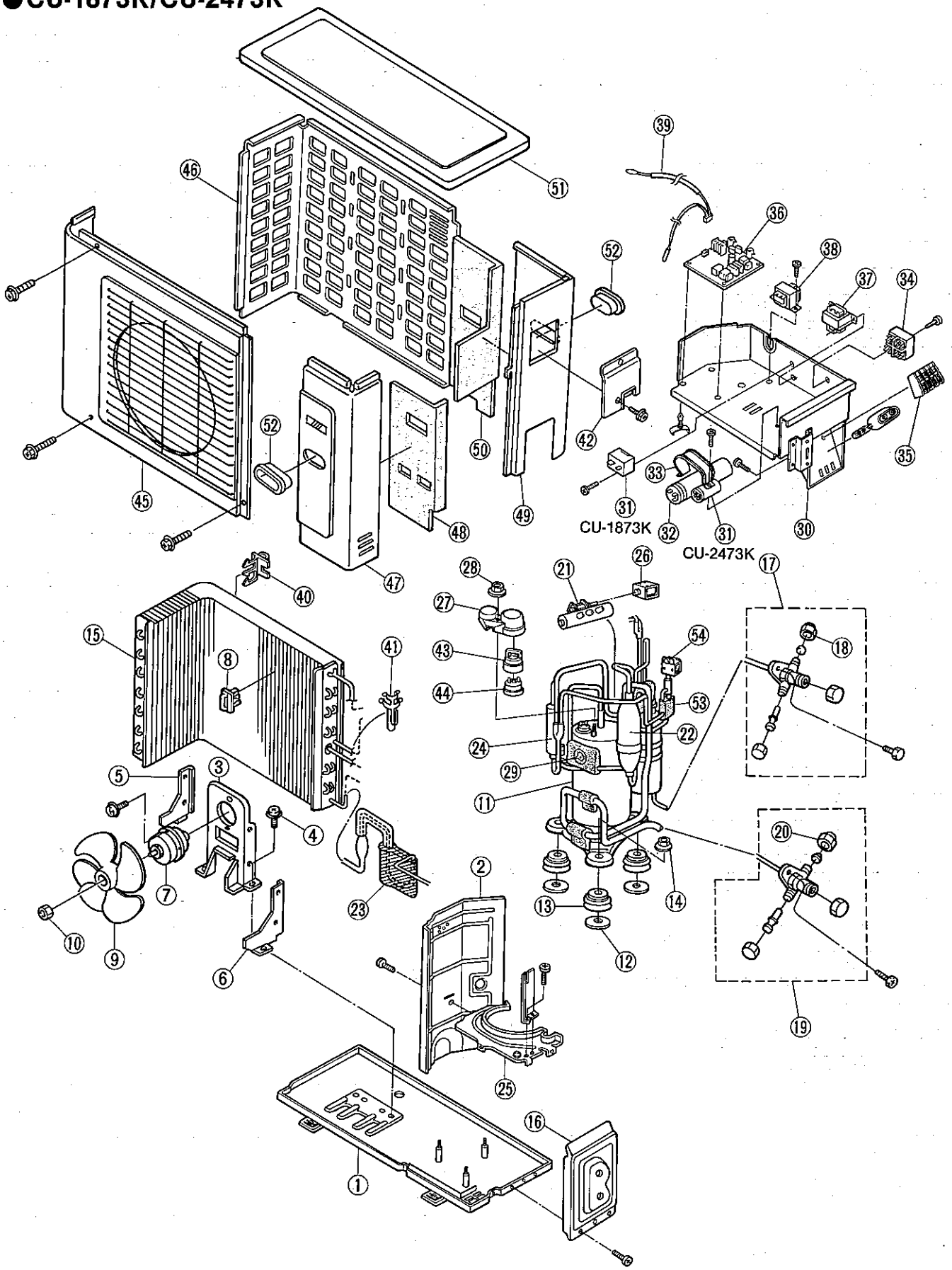
Replacement Parts List (CS-1873KE/CS-2473KE)

REF. No.	DESCRIPTION & NAME	Q'TY	CS-1873KE	CS-2473KE	REMARK
1	CHASSY COMPLETE	1	CWD50C126	←	
2	PLUG	2	CWB82040	←	
3	FAN MOTOR	1	CWA98155	CWA98156	○
4	CROSS-FLOW FAN	1	CWH02K086	←	
5	BEARING ASS'Y	1	CWH64K007	←	○
6	EVAPORATOR	1	CWB30C085	CWB30C082	
7	TUBE ASS'Y COMPLETE	1	CWT01C087	CWT01C093	
8	FLARE NUT (1/4")	1	CWH6002140	←	
9	FLARE NUT (1/2" ; 5/8")	1	CWT25007	CWT25004	
10	HOLDER-SENSOR	1	CWH32050	CWH32097	
11	PARTICULAR PIECE	1	CWD93333	←	
12	DISCHARGE GRILLE COMPLETE	1	CWE20C396	←	
13	AIR SWING MOTOR	1	CWA98K075	←	○
14	TAP-DRAIN TRAY	1	CWH4612103	←	
15	VANE	1	CWE24326	←	
16	VANE	1	CWE24327	←	
17	SENSOR COMPLETE	1	CWA50C421	CWA50C431	○
18	CONTROL BOARD	1	CWH10804	←	
19	TERMINAL BOARD	1	CWA28C371	CWA28C372	○
20	POWER SUPPLY CORD	1	CWA20C504	CWA20C505	
21	SLIDE SWITCH	1	CWA04079	←	○
22	TRANSFORMER	1	CWA40C246	←	○
23	PCB-MAIN	1	CWA74591	CWA74606	○
24	PCB-POWER SUPPLY	1	CWA74592	CWA74607	○
25	RECEIVER COMPLETE	1	CWA74321	CWA74642	○
26	INDICATOR COMPLETE	1	CWE39C218	←	○
27	REMOTE CONTROL COMPLETE	1	CWA75C377	←	○
28	FRONT GRILLE COMPLETE	1	CWE11C241	←	○
29	CATCHER COMPLETE	2	CWH60060	←	
30	INDICATOR COMPLETE	1	CWE39202	←	
31	AIR FILTER	1	CWD00170	←	○
32	AIR FILTER	1	CWD00171	←	○
33	CONTROL PANEL	1	CWE31894	←	
34	CONTROL PANEL	1	CWE31901	←	
35	SELF TAPPING SCREW-FRONT GRILLE	4	XTN4+16C	←	
36	CAP	3	CWH52186	←	
37	CABINET BOTTOM PLATE	1	CWE05C019	←	
38	OPERATING INSTRUCTION	1	CWF56754	←	
39	INSTALLATION INSTRUCTION	1	CWF61118	←	
40	INSTALLATION PLATE	1	CWH36085	←	
41	BAG COMPLETE-AIR PURIFYING FILTER	1	CWG87C738	←	
42	AIR PURIFYING FILTER	2	CWD00134	←	○
43	SCREW-INSTALLATION	1	CWG87C705	←	
44	HOLDER SENSOR	1	CWH32073	←	
45	DRAIN HOSE	1	CWH85178	←	

Note
- All parts are supplied from MACC, Malaysia. (Vendor Code: 086)
- ○ mark parts are recommended to be kept in stock.
- The above parts are kept for seven years in accordance with MEI service policy. However, longer lead time will be taken in supplying the non-numbered parts.

Exploded View

●CU-1873K/CU-2473K



(Note) The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

Replacement Parts List (CU-1873KE/CU-2473KE)

REF. No.	DESCRIPTION & NAME	Q'TY	CU-1873KE	CU-2473KE	REMARK
1	CHASSIS ASS'Y	1	CWD50K514B	←	
2	SOUND PROOF BOARD	1	CWH15223	←	
3	BRACKET FAN MOTOR	1	CWD54145	←	
4	SCREW	6	CWH55101	←	
5	SUPPORTER-BRACKET F/M (L)	1	CWD90835	←	
6	SUPPORTER-BRACKET F/M (R)	1	CWD90836	←	
7	FAN MOTOR	1	CWA92176	CWA92183	○
8	HOLDER-F.M. LEAD WIRES	3	CWH31043	←	
9	PROPELLER FAN	1	CWH00K049	←	
10	NUT FOR PROPELLER FAN	1	CWH56060	←	
11	COMPRESSOR	1	2JS356D3BA01	2JS442D3BB01	○
12	PACKING-COMP. MOUNT	2	CWB81043	←	
13	BUSHING-COMP. MOUNT	3	CWH50055	←	
14	NUT-COMP. MOUNT	3	CWH4582065	←	
15	CONDENSER	1	CWB32C162	CWB32C163	
16	HOLDER COUPLING	1	CWH35113B	CWH35114B	
17	3-WAYS VALVE (LIQUID)	1	CWB01363	←	○
18	FLARE NUT (1/4")	1	CWH6002140	←	
19	3-WAYS VALVE (GAS)	1	CWB01364	CWB01377	○
20	FLARE NUT (5/8")	1	CWT25007	CWT25004	
21	4-WAYS VALVE ASS'Y	1	CWB00K000	CWB00K001	○
22	ACCUMULATOR ASS'Y	1	CWB13K011	←	
23	TUBE ASS'Y (CAPILLARY TUBE, STRAINER)	1	CWT02092	CWT02074	
24	OIL SEPARATOR	1	CWB16000	CWB16K005	
25	GUIDER-COMPLETE	1	CWD90830	←	
26	V-COIL COMPLETE	1	CWA43C444	←	○
27	TERMINAL COVER-COMP.	1	CWH17015	←	
28	NUT FOR TERMINAL COVER	1	CWH7080300	←	
29	TUBE ASS'Y	1	CWT01808	←	
30	CONTROL BOARD	1	CWH10K376	←	
31	CAPACITOR-F.M.	1	CWA31242	CWA31357	○
32	CAPACITOR-COMP.	1	CWA31625	CWA31626	○
33	HOLDER-CAPACITOR	1	CWH30057	CWH30138	
34	TERMINAL BOARD	1	CWH4711022	←	○
35	TERMINAL BOARD	1	CWA28C382	←	○
36	ELECTRONIC CONTROLLER	1	CWA74635	CWA74573	○
37	TRANSFORMER COMPLETE	1	CWA40C192	←	○
38	TRANSFORMER COMPLETE	1	CWA40C251	←	○
39	SENSOR COMPLETE	1	CWA50C429	←	○
40	HOLDER SENSOR	1	CWH32089	←	
41	HOLDER SENSOR	1	CWH32074	←	
42	CONTROL BOARD COVER	1	CWH13336A	←	
43	OVERLOAD PROTECTOR	1	CWA12262	←	○
44	HOLDER-O.L.P.	1	CWH34012	←	
45	CABINET FRONT PLATE ASS'Y	1	CWE06K024B	←	
46	CABINET REAR PLATE	1	CWE02096B	←	
47	CABINET FRONT PLATE	1	CWE06075B	←	
48	SOUND PROOF MATERIAL	1	CWG30539	←	
49	CABINET SIDE PLATE	1	CWE04111B	←	
50	SOUND PROOF MATERIAL	1	CWG30528	←	
51	CABINET TOP PLATE	1	CWE03049B	←	
52	HANDLE	2	CWE16000E	←	
53	2-WAYS VALVE	1	–	CWB02018	○
54	V-VOIL COMPLETE	1	–	CWA43C494	○

Note
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- ○ mark parts are recommended to be kept in stock.
- The above parts are kept for seven years in accordance with MEI service policy. However, longer lead time will be taken in supplying the non-numbered parts.

ELECTRONIC PARTS LIST

CWA74591 • ELECTRONIC CONTROLLER (MAIN: CS-1873K)
CWA74606 • ELECTRONIC CONTROLLER (MAIN: CS-2473K)

SYMBOL	DESCRIPTION & NAME	PART NO	REMARK
IC1	MICRO-COMPUTER	A52C78629Y	
IC2	INTEGRATED-CIRCUIT	A52BX8315	
IC3	INTEGRATED-CIRCUIT	A52MPA2003C	
IC4	REGULATOR INTEGRATED-CIRCUIT	A52C050 (A52MPC78M05H)	
Q1	TRANSISTOR	A55UN4211TA	
Q2	TRANSISTOR	A55C1740STPQ	
Q3	TRANSISTOR	A55UN4224TA	
D1	DIODE	A54MA165TA5	
ZD1	DIODE	A54D6.2EL1TB	
X1	RESONATOR	A45ST4.0MGWT	
VR1	VOLUME	A44VG67TP152	
BZ1	BUZZER	A48006	
SW1	SWITCH	A04042M	
SW2	SWITCH	A01059	
SW3	SWITCH	A01059	

CWA74592 • ELECTRONIC CONTROLLER (POWER: CS-1873K)
CWA74607 • ELECTRONIC CONTROLLER (POWER : CS-2473K)

SYMBOL	DESCRIPTION & NAME	PART NO	REMARK
IC101	INTEGRATED-CIRCUIT	A52BX8271	
IC102	REGULATOR INTEGRATED-CIRCUIT	A52C065 (A52MPC78M12H+A58041)	
Q101	TRANSISTOR	A55C096 (A55C4300M+A58054)	
Q102	TRANSISTOR	A55D2220QTA	
Q103	TRANSISTOR	A55UN4211TA	
Q104	TRANSISTOR	A52MP3009	
Q105	TRANSISTOR	A52MP3005	
D101	DIODE	A54RB44-08V	
D102	DIODE	A54C142 (A54MA653LE+A58041)	
D103	DIODE	A541SS131T	
D104	DIODE	A54RA15-01V3	
ZD101	DIODE	A54D33FB38F	
DB101	BRIDGE DIODE	A54D3SBA60F1	
DB102	BRIDGE DIODE	A54CS1VB10E (A54S1VB10)	
PC101	PHOTO COUPLER	A52LP620-GB	
ZNR101	ZNR	A54C036 (ERZC10DK471U+4612113)	
L101~L104	COIL	A43036	
LF101	NOISE FILTER	A49148	
T101	TRANSFORMAR	A40287	
T102	TRANSFORMAR	A40263	
RY-HOT	RELAY	A00161	
RY-PWR	RELAY	A00164	
CR101	SURGE ABSORBER	A59015	
FUSE	FUSE	XBA2C31TR0	

Note • All parts are supplied from MACC, Malaysia. (Vendor Code: 086)
• ○ mark parts are recommended to be kept in stock.

ELECTRONIC PARTS LIST

CWA74635 • ELECTRONIC CONTROLLER (OUTDOOR MAIN: CU-1873K)
CWA74573 • ELECTRONIC CONTROLLER (OUTDOOR MAIN: CU-2473K)

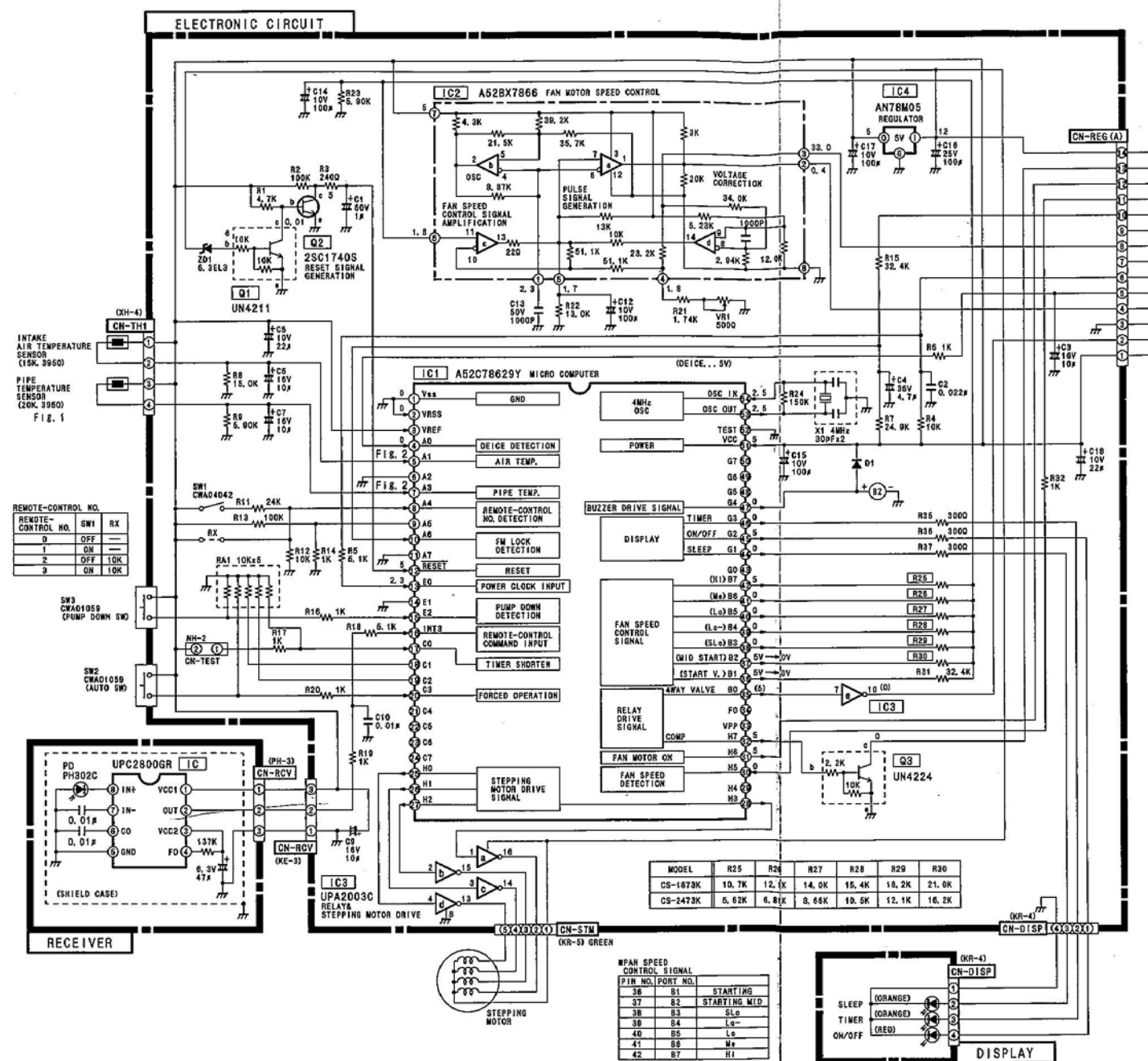
SYMBOL	DESCRIPTION & NAME	PART NO	REMARK
IC1	MICRO-COMPUTER	A52C78414Y	
IC2	REGULATOR INTEGRATED-CIRCUIT	A52C060 (A52A78DL12S+A58052)	
IC3	REGULATOR INTEGRATED-CIRCUIT	A52C040 (A52AN78N05)	
IC4	INTEGRATED-CIRCUIT	A52MPA2003C	
Q1	TRANSISTOR	A55C1740STPQ	
Q2	TRANSISTOR	A55DTC113ZST	
D1~D6	DIODE	A54MA165TA5	
ZD1	DIODE	A54D7.5EL1TB	
DB1, DB2	BRIDGE DIODE	A54CS1VB10E (A54S1VB10)	
ZNR1, ZNR2	ZNR	A54C036 (ERZC10DK471U+4612113)	
X1	RESONATOR	A45ST4.0MGWT	
RY-DEICE	RELAY	A00084	
RY-OFF	RELAY	A00084	
RY-HOT	RELAY	A00084	
RY-H/L	RELAY	A00084	
RY-V	RELAY (CU-2473K only)	A00084	
FUSE	FUSE	XBA2C20TR0	

Note • All parts are supplied from MACC, Malaysia. (Vendor Code: 086)
• ○ mark parts are recommended to be kept in stock.

CS-1873K/CS-2473K CS-1873K/CS-2473K
CS-1873K/CS-2473K

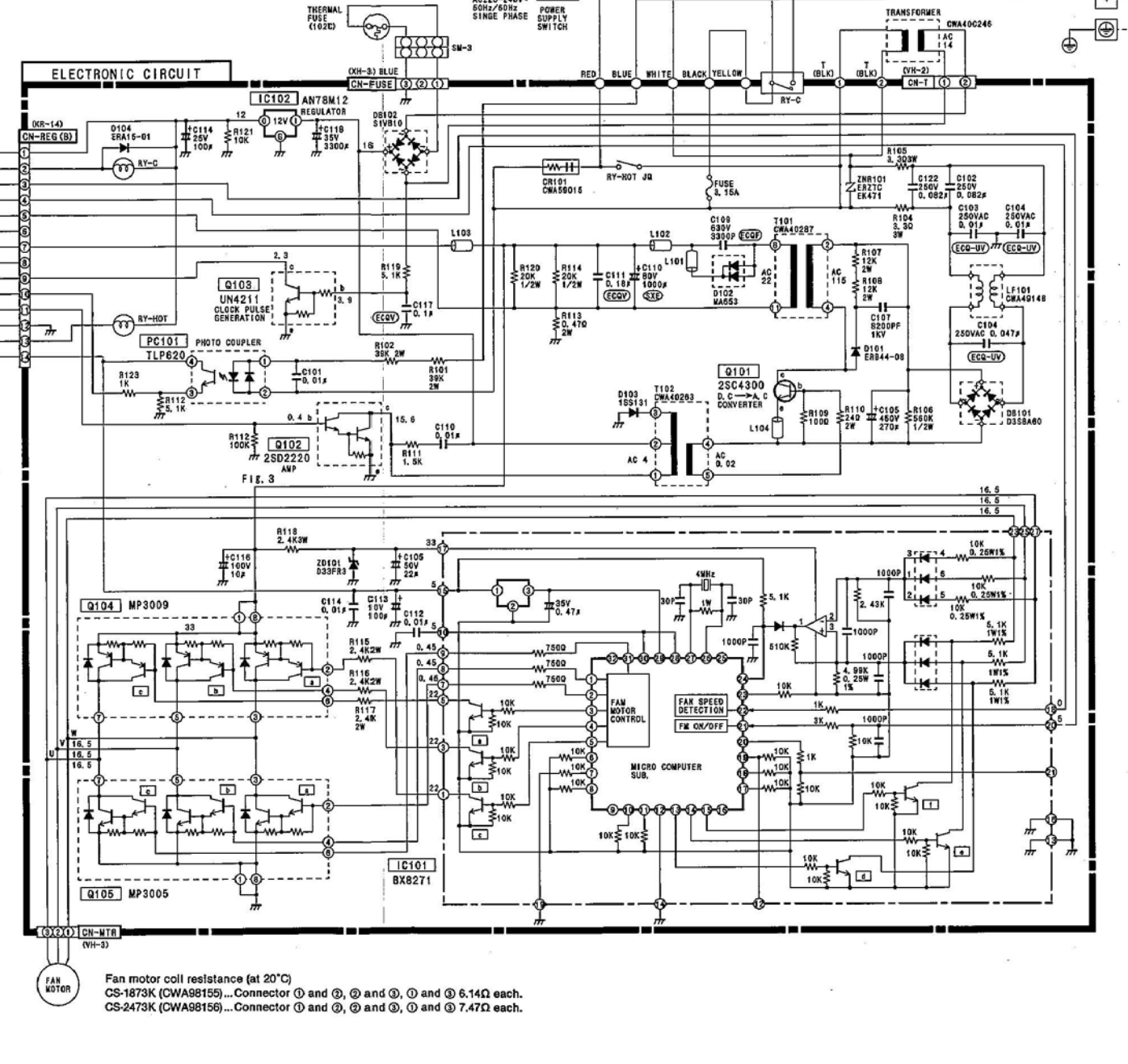
ELECTRONIC CIRCUIT DIAGRAM

● CS-1873K • CU-1873K/CS-2473K • CU-2473K SERIES



MODEL	R25	R26	R27	R28	R29	R30
CS-1873K	10.7K	12.0K	14.0K	15.4K	18.2K	21.0K
CS-2473K	6.65K	8.06K	9.65K	10.5K	13.1K	16.2K

FAN SPEED CONTROL SIGNAL (PIN NO./PORT NO.)		
36	52	STARTING
37	53	STARTING MID
38	54	SLo
39	55	Lo
40	56	Me
41	57	Hi



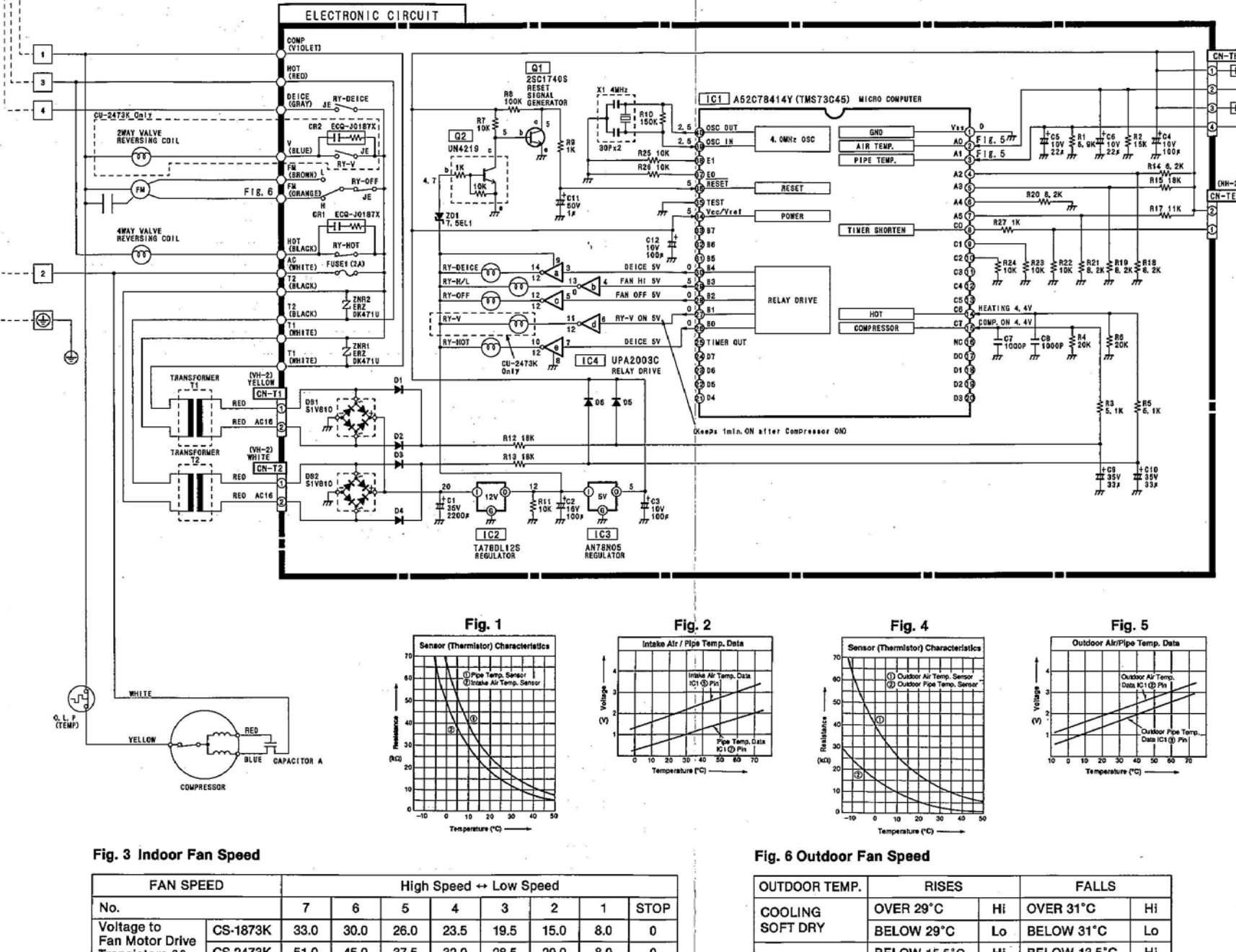


Fig. 1

Fig. 2

Fig. 4

Fig. 5

Fig. 3 Indoor Fan Speed

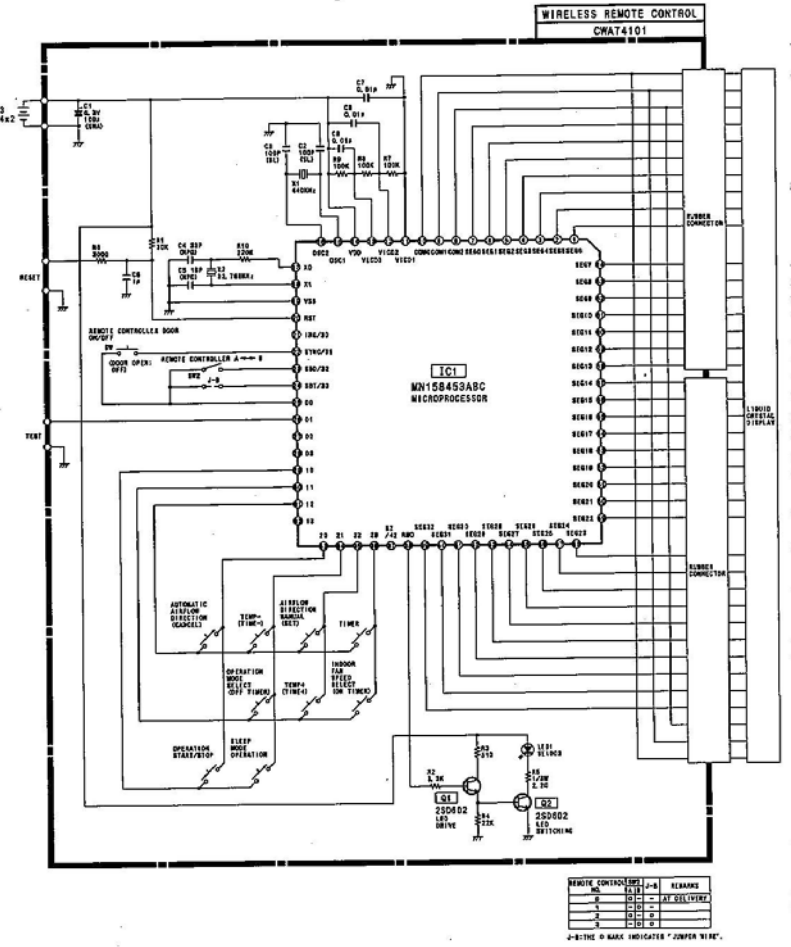
FAN SPEED		High Speed ↔ Low Speed							
No.		7	6	5	4	3	2	1	STOP
Voltage to Fan Motor Drive Transistors (V)	CS-1873K	33.0	30.0	26.0	23.5	19.5	15.0	8.0	0
	CS-2473K	51.0	45.0	37.5	32.0	28.5	20.0	8.0	0
		Hi	Me	Lo	Lo⁻	SLo			

Fig. 6 Outdoor Fan Speed

OUTDOOR TEMP.	RISES		FALLS	
COOLING SOFT DRY	OVER 29°C	Hi	OVER 31°C	Hi
	BELOW 29°C	Lo	BELOW 31°C	Lo
HEATING	BELOW 15.5°C	Hi	BELOW 13.5°C	Hi
	OVER 15.5°C	Lo	OVER 13.5°C	Lo

ELECTRONIC CIRCUIT DIAGRAM

(● REMOTE-CONTROLLER)



How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

★ Voltage measurement
Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.
Use them for servicing.
Voltage indications are in Red at heating and all operations.
Voltage indication is in (Red) at cooling.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C
Heating	20°C	30°C	40°C	50°C

★ Indications for resistance
a. K ... kΩ M ... MΩ
W ... watt Not indicated ... 1/4W

★ Indication for capacitor
a. Unit μ ... μF P ... pF

★ Diode without indication ... MA165

★ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE (INDOOR UNIT)

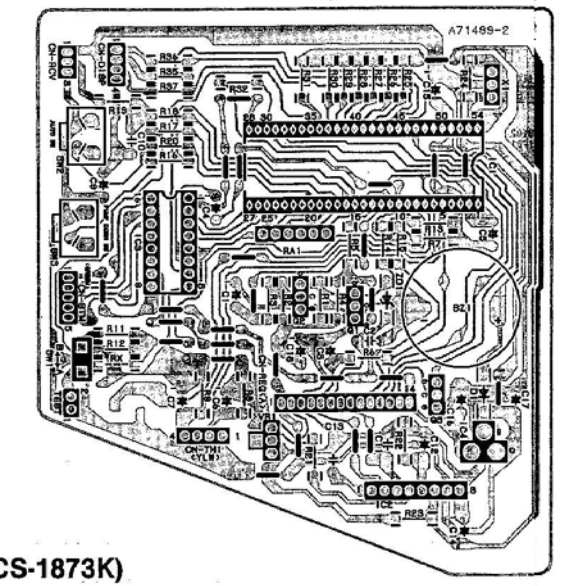
Mode	Name	Time	Test Mode (When test point short-circuited)	Remarks
Shared	Compressor Restart Prevention	2min. 58sec.	0sec.	
	Time	1hrs.	1min.	
		10min.	10sec.	
	Compressor min. Operation time	60sec.	0sec.	Circuitry Protection Control
	Sleep Operation Control	5hrs	30sec.	Cooling
		8hrs.	48sec.	Heating nd Soft Dry
Cooling/ Soft Dry	Automatic Restarting Control	7min.	42sec.	7min. S e Time (Cooling nly)
	Anti Freezing Control	4min.	1sec.	Continuc s If PipInt emp. < 2°C
	Drying OFF Time	6min.	36sec.	
Heating	Outdoor Unit Fan Forced Operation	30sec.	3sec.	After Co pressor Stop
	De-icing	60min.	6sec.	De-icing ntervel
		12min.	72sec.	De-icing Basic Time
	4-Way Valve Control	5min.	30sec.	
Auto	Room Temperature Sampling	20sec.	0sec.	Operatic Mode Judgmer t Time
Fan Control	Prohibition Time of Speed Control Detection	5sec.	5sec.	
	Number of Speed Control Detection Counter Clear Time	25sec.	25sec.	
	Starting Voltage ON Time	5sec.	5sec.	
	Fan Motor ON Delay	1.5sec.	1.5sec.	
	Fan Motor Restart Prevention	5sec.	5sec.	

TIMER TABLE (OUTDOOR UNIT)

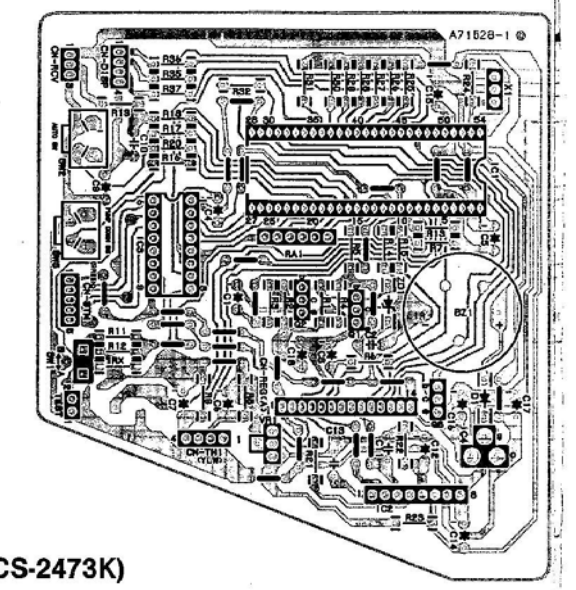
Name	Time	Test Mode (When test point Short-circuited)	Remarks
Deice Operation Time	12min.	12sec.	Complete Time.
4 Way Valve Delayed on Time	10sec.	1sec.	Complete Time~4 Way V ve ON Complete 4-Way Valve Of ~Outdoor FAN.
Minimum Heating Operation Time	60min.	6sec.	From Hot relay ON or fror previous Deice Complete Time.
Outdoor Fan OFF Time	60min.	60sec.	Accumulated Time of Ou door Fan OFF.

PRINT PATTERN
INDOOR UNIT PRINTED CIRCUIT BOARD

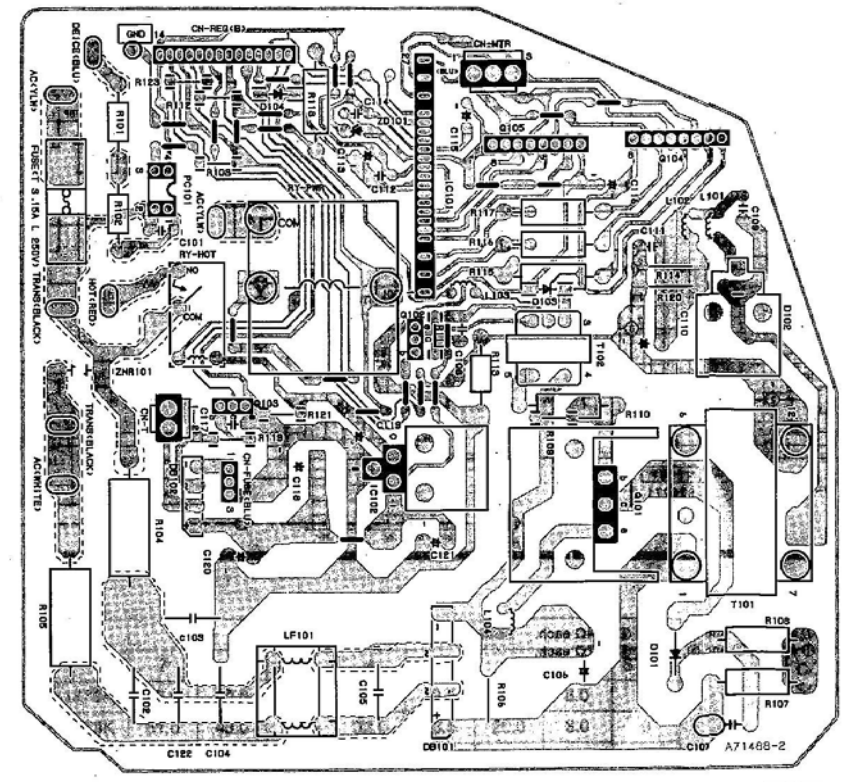
● MAIN (CS-1873K)



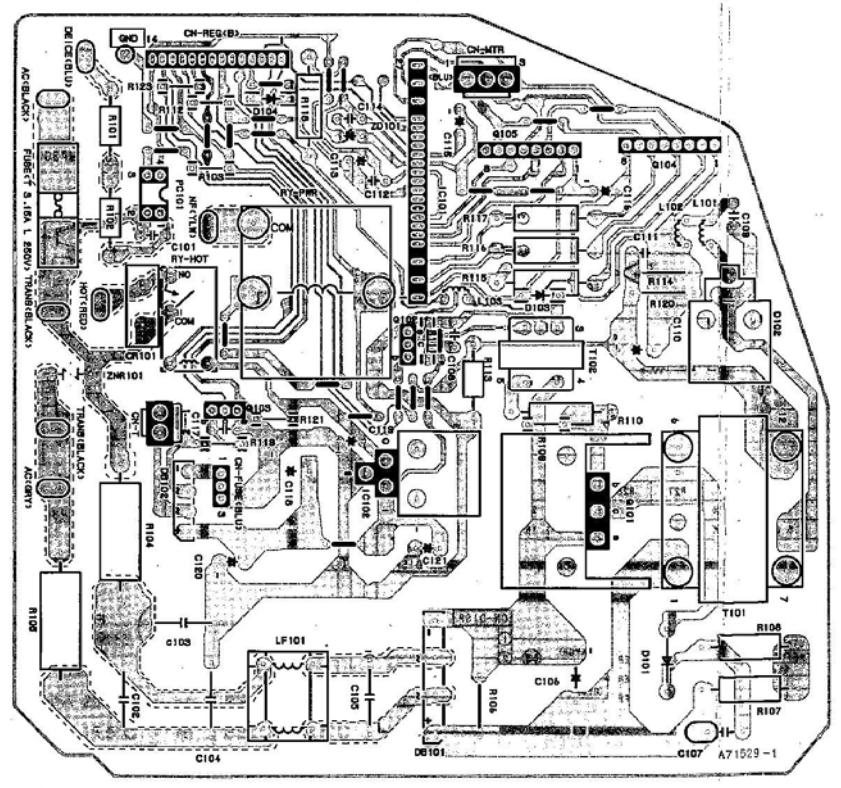
● MAIN (CS-2473K)



● POWER (CS-1873K)

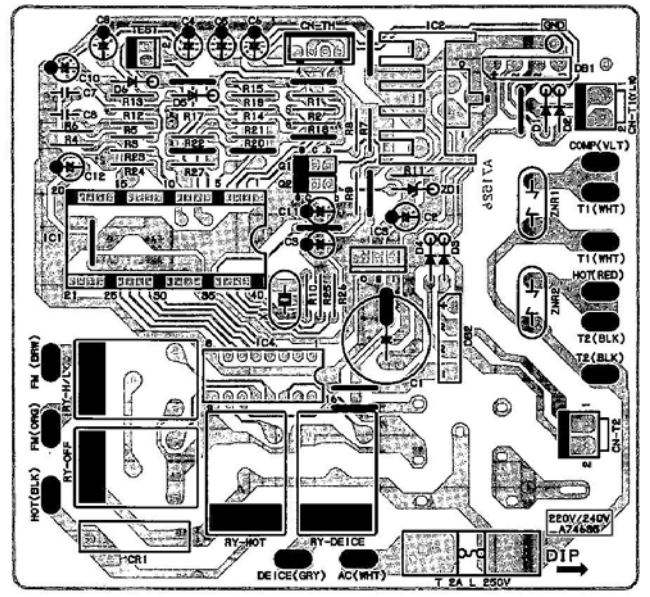


● POWER (CS-2473K)

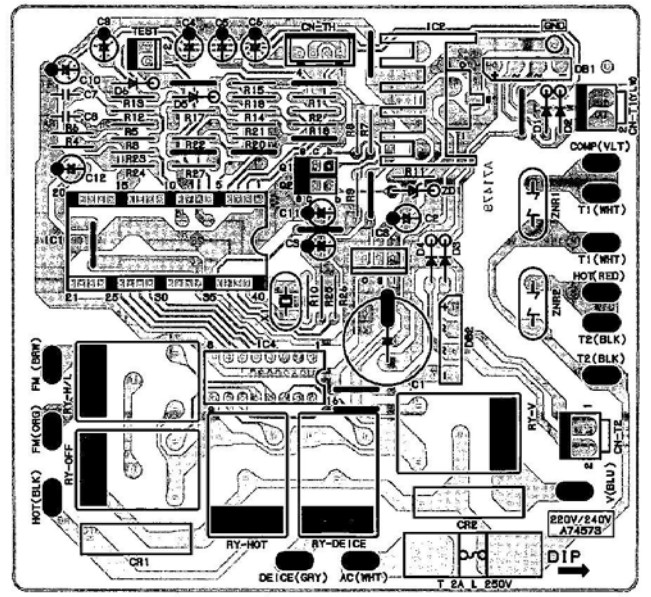


OUTDOOR UNIT PRINTED CIRCUIT BOARD

● MAIN (CU-1873K)



● MAIN (CU-2473K)



ORDER NO. MAC9805008S2

Service Manual

ROOM AIR CONDITIONER

Supplement

CS-1873KE / CU-1873KE
CS-2473KE / CU-2478KE

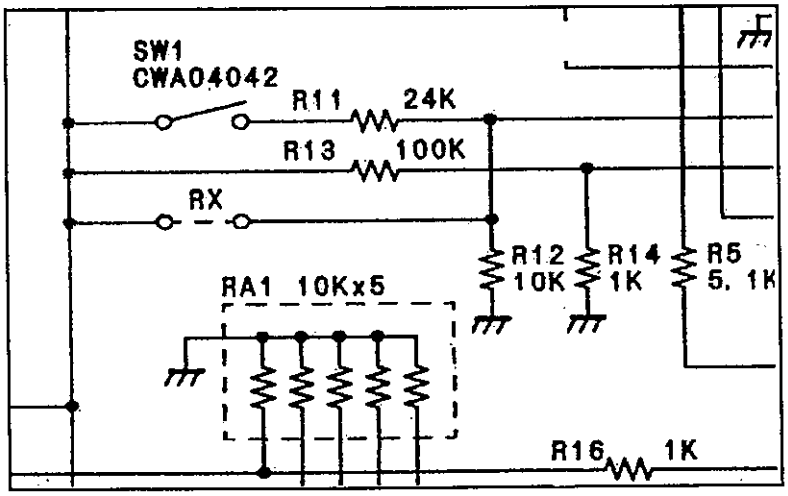
⚠WARNING

This service information is designed for experience repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced profesional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Please file and use this Supplement Service Manual together with the service manual for model CS/CU-1873KE, CS/CU-2473KE, Order No.: RAC9402008C2

Electronic Circuit Diagram

(Please refer to Electronic Circuit Diagram, area 2-D)



Refering to the diagram, R11 and R12 value have been changed as stated below.

ITEMS	R11 (kΩ) PREVIOUS	R11 (kΩ) NEW	R12 (kΩ) PREVIOUS	R12 (kΩ) NEW	STARTING SERIAL NUMBER
CS-1873KE	24.0	26.1	10.0	24.0	0312930011
CS-2473KE	24.0	26.1	10.0	24.0	0313318001

Notes: All changes will be implemented starting from this serial number (above) onwards.

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ORDER NO. MAC9805008S2

Service Manual

Supplement

APPROVED BY:

MR. K. MORISIHMA
(MANAGER GCS/ISS)

ROOM AIR CONDITIONER

CS-1873KE / CU-1873KE
CS-2473KE / CU-2478KE

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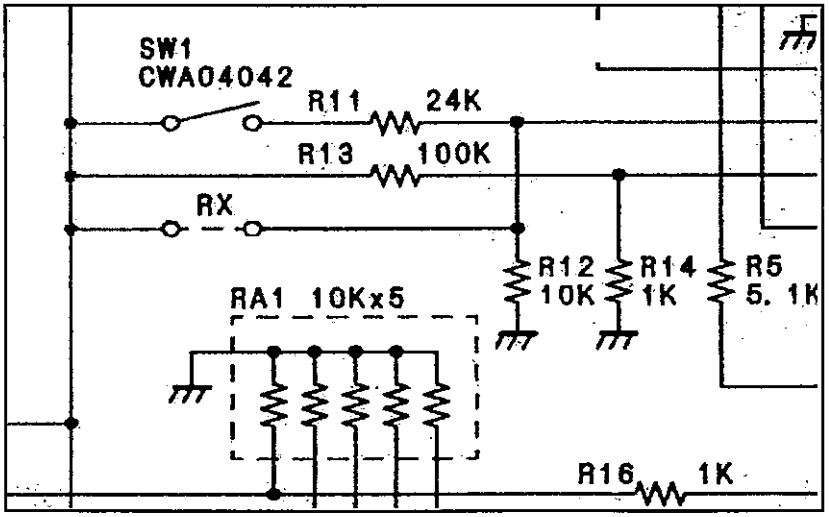
Electronic Circuit Diagram

(Please refer to Electronic Circuit Diagram, area 2-D)



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	PREVIOUS	NEW	PREVIOUS	NEW	
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Service Manual

ROOM AIR CONDITIONER

Supplement

MODEL : CS/CU-1873KE
CS/CU-2473KE

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Subject: **Revision of Wiring Diagram.**

SYMBOL	REVISION
⚠1	Add. the Thermal Fuse (99°C).
⚠2	Correction from " W " to " B "
⚠3	Correction of Diagram.

Revised Of Wiring Diagram
(refer to the next page).

APPROVED BY:

MASU

MR S. MASUBUCHI
C G. MANAGER - TSO/SMO).

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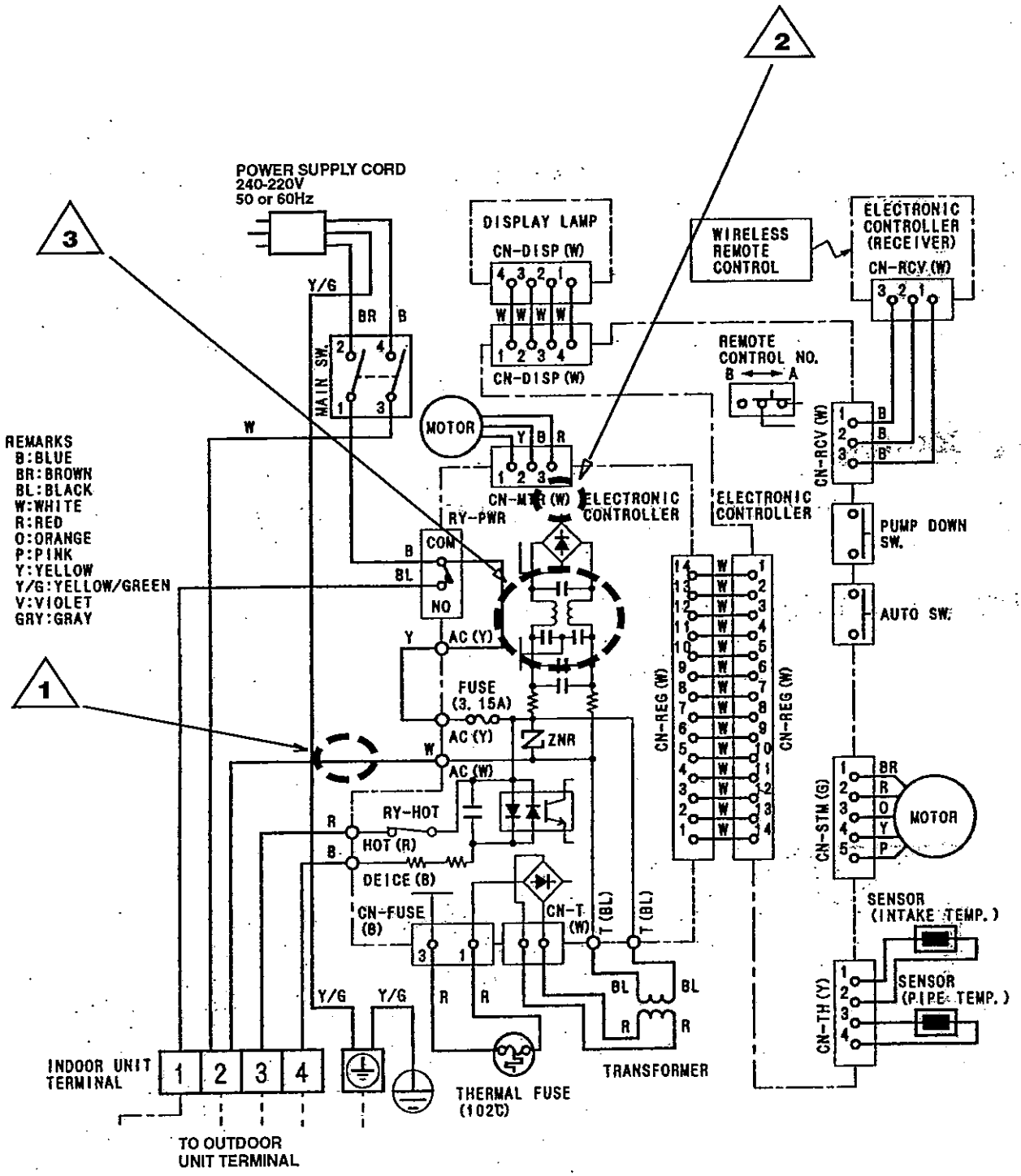
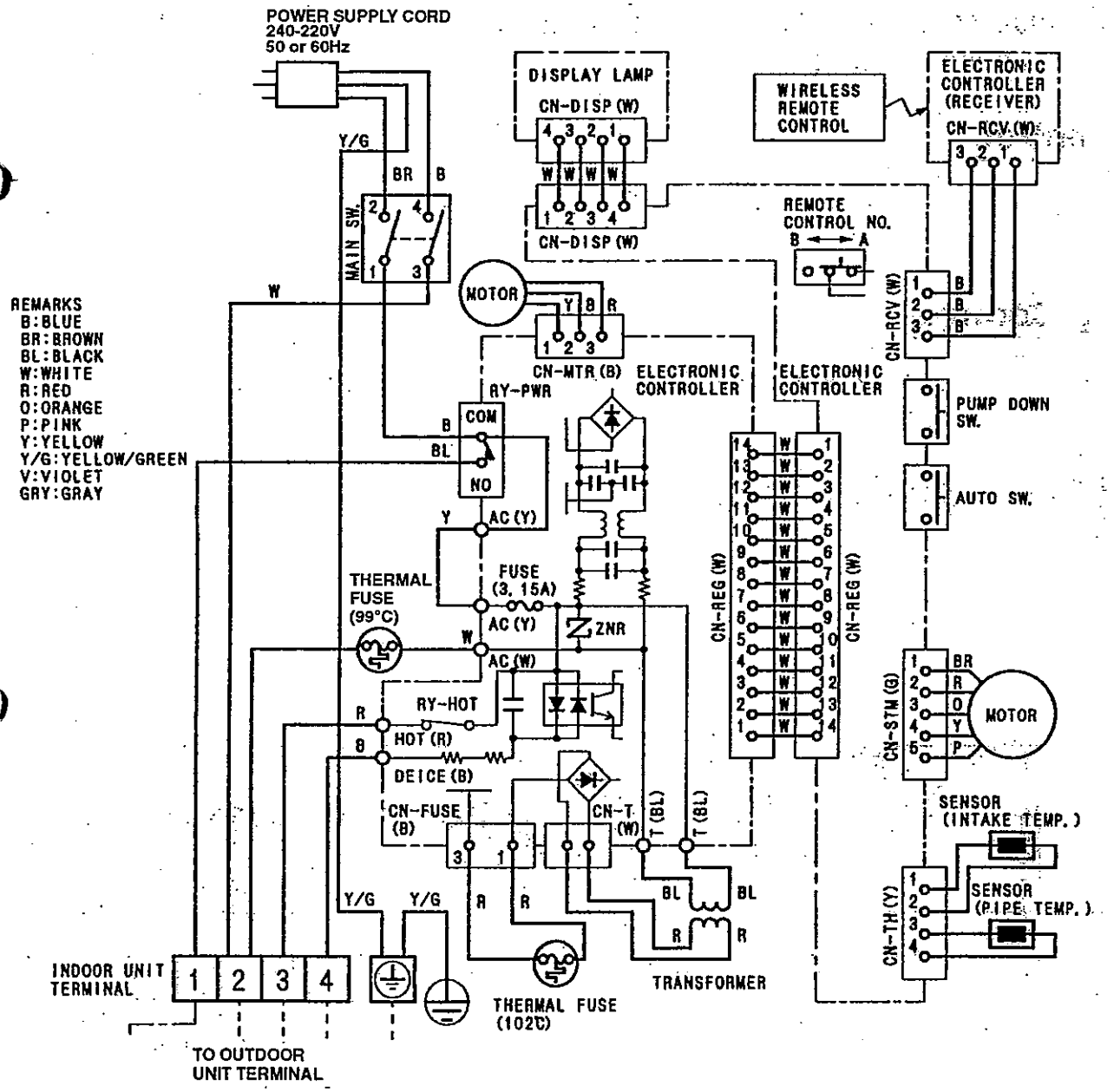
Previous Diagram.
(Page : 8)



New Diagram.


POWER SUPPLY CORD
240-220V
50 or 60Hz
DISPLAY LAMP
CN-DISP (W)
WIRELESS REMOTE CONTROL
ELECTRONIC CONTROLLER (RECEIVER)
CN-RCV (W)
REMOTE CONTROL NO.
B ⟷ A
MAIN SW.
MOTOR
CN-MTR (B)
ELECTRONIC CONTROLLER
ELECTRONIC CONTROLLER
CN-RCV (W)
PUMP DOWN SW.
AUTO SW.
REMARKS
B:BLUE
BR:BROWN
BL:BLACK
W:WHITE
R:RED
O:ORANGE
P:PINK
Y:YELLOW
Y/G:YELLOW/GREEN
V:VIOLET
GRY:GRAY
RY-PWR
COM
NO
AC (Y)
THERMAL FUSE (99°C)
FUSE (3, 15A)
ZNR
AC (W)
RY-HOT
HOT (R)
DEICE (B)
CN-FUSE (B)
CN-T (W)
T (BL)
CN-REG (W)
CN-REG (W)
CN-STM (G)
MOTOR
SENSOR (INTAKE TEMP.)
SENSOR (PIPE TEMP.)
CN-TH (Y)
INDOOR UNIT TERMINAL
TO OUTDOOR UNIT TERMINAL
THERMAL FUSE (102℃)
TRANSFORMER